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THE INTERRELATIONSHIP OF MOTHER AND FETUS

CHAIRMAN'S ADDRESS

FRED L. ADAIR, M.D.

Professor of Obstetrics and Gynecology, the University of Chicago

CHICAGO

The relations of mother and fetus are so intimate that it may appear entirely unnecessary to discuss their interrelationships, and yet the effect of the one on the other constitutes the fundamentals of obstetrics. The intertwining relations are so manifold, involving the physical, the mental, the psychologic, the social, and many other aspects of human life, that it would be difficult to discuss them all. Much might be said concerning the psychologic effect of no children, of abortions, of dead-born, of malformed or defective children and of too many children on the mother. It is not my intention to discuss these problems. It might be well to mention that a population equilibrium requires between three and four children in a family. Such an even distribution is not possible, since some couples will have more and others less. Arguments for the spacing of children have been advanced, and a reasonable interval between childbirths is without doubt beneficial to the mother but probably not so material for the infant. It is probable that selective limitation of the size of families is of greater importance than an attempt at accurate spacing of pregnancies.

The program of this section has been directed largely to a consideration of some fundamental obstetric problems and has been aimed at giving some systematic idea of what constitutes adequate consecutive antenatal, natal and postnatal care. This can be furnished only when one has some understanding of the interrelationships that exist between the mother and the fetus.

The exact relative importance of heredity and environment is not known. It is quite certain, however, that heredity is an extremely important factor in certain conditions. The whole field of eugenics is based on heredity. The potency of these forces in the vegetable kingdom and among the lower animals is recognized, so why attempt to palliate or deny the potency of such laws in the human race?

The first interrelationship arises in the genes of the parents, and we are particularly interested in those of the mother, though the paternal chromosomes may carry equally potent forces. The mother marks her infant, not with the fanciful imagery of birthmarks, but with the ancestral tendencies. Some of these tendencies should be encouraged and others should be suppressed for the good of all concerned. The continuation of a harmful interrelationship with the progressive increase of highly undesirable defects from generation to generation should be arrested. This tendency must be controlled in the process of our racial development by compulsion in some instances and by enlightenment in others. We, as physicians, must recognize and also lead in programs for human betterment by some control of hereditary factors. We recognize individual variations between parents whose individual dominant and recessive characters might lead to the transmission of the characteristics of one parent or the other to the infant. Nevertheless, on the whole, one parent would probably transmit as many hereditary influences to the offspring as the other.

The next item of importance is the production of normal, healthy ova and sperm cells. Environment can affect only the germ cell itself in the father. In the mother not only the germ cell is affected by its surroundings, but the ovum, from the very moment of its fertilization, is subject not alone to such influences, but is also absolutely dependent on the maternal environment for its existence. We know that many ova fail to be fertilized, and that multitudes of spermatozoa fail to reach their goal. This is, of course, fortunate in a seemingly crowded world. The important fact is that many fertilized ova develop improperly because they are intrinsically defective or because of unfavorable environment. Pathologic embryos develop and are lost in early abortions. Others survive and lead to the formation of monsters which die before, during or soon after, birth. Others survive for varying periods of time to plague their parents and burden society. What influences work on the germ cells to produce such perversions of development? The defect may lie in the ovum or, possibly, in the sperm, or the fertilized ovum may be subjected to some maternal influence that leads to this abnormal development. The pairing of germ cells with defective chromosomes leads to maldevelopment of parts or of almost the entire embryo. It is not known what hereditary or environmental influences produce these imperfect germ cells.

We know that certain toxins will destroy germ cells. In all probability, they are subject to injurious influences which may not destroy their potency but which lead to subtle changes. Infertility may apparently result from physical and mental exhaustion. Why not imagine some damage to these cells which is short of infertility? As an example, perverted and subnormal thyroid activity may lead to infertility. Why not recognize some intermediate damage to procreative cells or environment?

The ovum is fertilized, and through some vagaries of nature becomes implanted in the uterine tube, which

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almost invariably leads to its own destruction and causes serious danger and sometimes death of the mother. The causation may be some antecedent developmental or acquired genital condition of the mother.

The ovum passes into the uterus and becomes embedded in the prepared decidua, where it develops into the embryo through progressive stages of cell division. It carries little nutriment within itself, and almost from the moment of fertilization it is dependent on extraneous maternal fluids and tissues for its sustenance.

The ovum and embryo is an invader, and usually, though not always, can be regarded as a beneficent parasite. Maternal reactions are excited, and definite tissue reactions develop, either from the stimulus of the embryo itself or from some hormone of remote origin. The potency of such hormones is seen by the marked reactions observed in animals following the injections of relatively small amounts of urine from women in early pregnancy. The prepared decidua is invaded, penetrated and stimulated by the ovum, which burrows its way deep into the maternal decidua, where it lies close to its food supply and as remote as possible from more external influences within the uterine cavity. The yolk sac and its vitelline circulation appear and disappear and are replaced by that of the chorion, which later becomes transformed into the placental circulation. Preceding the formation of the chorionic villi, the invasive fetal epithelium passes into the maternal tissues even beyond the decidua. The myometrium is invaded by these syncytial cells, which are often deported to the lungs and other portions of the body, where they are usually destroyed by some defensive maternal mechanism. This delicately balanced order is at times disturbed so that these cells gain the ascendency, sometimes with replacement of the fetus and its structures by a hydatidiform mole and sometimes without such replacement. A malignant condition may develop from this chorionic epithelium, with localized tumor formation. Chorionic cells are scattered in the maternal organs, often with disastrous results. Sometimes the removal of the original tumor results in the disappearance of these remote cells and of the peculiar hormone from the serum and urine. Some defensive maternal mechanism may destroy these tumor cells probably in the same manner as it obliterates the deported chorionic epithelium of pregnancy.

These morphologic changes are demonstrable with the microscope, but no such instrument reveals many more subtle alterations that are taking place. These are psychologic variations, which produce diverse reactions. Women frequently desire a termination of the pregnancy early, and later are most happy that the pregnancy was continued to a successful conclusion. There is not infrequently depression and even a psychosis which later disappears completely. The metabolic changes are not well understood, but are none the less definite. The disturbed functions leading to some of the so-called symptoms of pregnancy are hard to explain, except on the basis of perversion of some endocrine or metabolic function due to the absorption of some products arising from the fetus or its adjuncts. It is hard to comprehend the severe toxic conditions that occur in early pregnancy with marked gastro-intestinal symptoms, disorders of the nervous system, hemorrhages, etc., on any other supposition. Death is sufficient evidence of the reality of these conditions, and recovery from such intoxications, following the emptying of the uterus, is sometimes striking. It often happens that even in severe toxemia of this type, the course of the pregnancy and the normal development of the fetus seem to be uninterrupted.

THE CRITICAL EARLY PERIOD OF PREGNANCY

The early weeks and months of pregnancy are critical for both fetus and mother. The destiny of the former is commonly determined during this period, and the latter has to make real adjustments, not alone of a physical, but of a psychologic, character. The nutrition of the prospective mother often suffers during this period, not because of excessive demands by the fetus but on account of the disturbed digestive functions and altered metabolism and, occasionally, from toxic effects. The nutritive demands of the fetus during the early months are not great, as it needs relatively little proteins, minerals, etc. One cannot be so certain of the vitamin requirements, though vitamin E, which is fortunately widely distributed, can be regarded as essential to the life of the embryo.

It would be difficult to conceive of the probability that the fetal demands for nutrition could, in this early period, be responsible in any way for the symptoms of pregnancy and the marked metabolic changes in tissues and organs which are initiated in the maternal organism at this time.

In the early weeks and months the fetus consists largely of water and albuminoid material. Later, salts and fats are added as the placental circulation becomes established and the percentage requirement for component nitrogenous substances increases. For normal embryonic and fetal growth, one has to presuppose an endometrium free from previous inflammatory or deleterious disease and with a normal decidual response to hormonal stimulus. Such a decidual formation is vital in the early days and weeks, as there is probably no other means of transmission of nutritive substances from mother to fetus than osmosis, though one could not state that the trophoblastic cells have no selective action in absorbing substances from the maternal cells and fluids around them. The chorionic epithelium is formed and may play some nutritive rôle even before the cells serve as a means of communication between the maternal sinuses, which are filled with blood or lymphoid fluid, and the vascular tufts of the chorionic villi, filled with fetal blood.

For the proper performance and establishment of these morphologic and physiologic relations, it is essential that proper implantation occur. Otherwise chorionic and placental degenerations and accidents could occur which would lead to abortion, fetal death or malformation, immature fetus and, possibly, to placental separation or accretion, with danger to the mother.

It is likely that many of these variations from the normal are due as much to factors which are intrinsic in the ovum as to those which are extrinsic. It is definitely possible not only that the whole ovum may be defective, but also that parts of it may be and lead to varying degrees of imperfect development of tissues and organs.

Whatever the causes that control the implantation and development of the embryo and fetus may be, it is evident that it is just as important for the fetus to have proper relations established between the so-called fetal and maternal placentas as it is for the newly born infant to have a properly functioning gastro-intestinal tract.

The placenta serves both as a gateway and a barrier between the mother and the fetus. It is opened for the substances which the fetus needs from the constant stream of maternal fluids and closed to those which are unnecessary and deleterious, though the barrier is sometimes broken down for harmful materials.

The substances necessary for fetal growth seem to be much the same as those for postnatal life. The proteins, fats, carbohydrates, minerals, vitamins and water are essential substances for the fetus and must be supplied by the maternal organism. While the placenta acts as an osmotic membrane for some substances, it has functions of selection and storage and acts as a defense mechanism as well. The caloric requirements must be met, and the placenta appropriates the necessary proteins, fats and carbohydrates, even to the detriment of the mother.

Water is usually easily available, but the minerals may be deficient; nevertheless, the fetus appropriates these substances to provide for its skeletal and other tissue development. The mother may suffer, as the result of this demand, from some mineral deficiency. The minimal and proportional fetal requirements must be met. The storage of phosphorus, iron and calcium may suffer, with the result that postnatal rachitis can easily develop. Iodine may be deficient, with resultant thyroid changes. Vitamins are essential for the fetus. Reserve of minerals and, possibly, of some vitamins can be built up in the fetus through adequate maternal diet.

It seems possible to influence the metabolism and prevent maternal damage by a proper diet, so that the mother may be protected from mineral and vitamin deficiency, and the fetus may be delivered better able to cope with extra-uterine life. The growth and development of the fetus seems to be regulated by some hormonal action and not by the nutritive supply, as increase or diminution of proteins, fats and carbohydrates in the maternal diet seems to have little or no effect on the fetal size and weight.

The fetus follows certain laws of growth, largely uninfluenced by deficiency or excess of maternal food supply. The birth weight does not seem to be materially increased by abundant nutriment, nor is the reduction significant except in actual maternal deficiency diets.

HORMONES

The anterior pituitary of the mother hypertrophies during pregnancy, and some maternal cells and tissues show evidence of growth. It is probable that the placenta is permeable to hormones, and that the fetus is affected in its development by these hormones. There is also some indication that the mother may be affected by fetal hormones, which may be hypothecated in some cases of hypothyroidism. It would not be illogical to suppose that there is some reciprocal relationship between fetal and maternal hormones. It has been suggested that postnatal fetal lactation may be the result of maternal hormone stimulation. One of the best examples of the effect of deficient maternal hormone action is seen in congenital cretinism, in which the fetus suffers directly from the lack of thyroid secretion, from a myxedematous mother.

Hormones, which are formed in association with pregnancy, are doubtless responsible for the many changes that take place in the maternal organism. The alterations in the genitalia are most marked, and naturally have a direct relationship to the fetus. Some of these changes are of extreme importance to the mother, as they predispose to the development of abnormal conditions. The heart becomes somewhat dilated and perhaps hypertrophied, and there seems to be an increase in blood volume and minute volume as well. This increases the cardiac load, and if there is a lowered reserve it may lead to impaired function of this organ. There are important changes in the blood that affect the cellular elements, the gaseous interchange, the nitrogenous content, etc. These are important from the standpoint of their close relationship to pathologic conditions, such as anemias and toxemias. It is unnecessary to cite all the physiologic changes that carry the mother closer to the borderline of a pathologic condition, but one good illustration is found in the change in the urinary tract, which is shown by the lack of tonus in the upper part of the ureter with a tendency to dilatation which predisposes to retention and infection. Changes in the kidney and in the liver have led to such descriptive terms as the "kidney of pregnancy," the "liver of pregnancy," both of which designations imply a nearer approach to pathologic conditions.

There are marked changes in protein metabolism, with a tendency to nitrogen storage; sugar tolerance is decreased, and fat is stored. The fetus makes a vigorous call on the mother for minerals, the most important of which for mother and fetus are iron, calcium and phosphorus. The fetus demands not only enough for its immediate needs, but expects some for storage in order to meet the more rigorous demands of extra-uterine life.

PATHOLOGIC CONDITIONS

During pregnancy, certain pathologic states arise in the mother which are the direct result of the pregnancy and which may be regarded in a broad way as the effect of the fetus on the mother. Other conditions arise which are more or less accidental, but which complicate the pregnancy. In some of both of these types of conditions the mother is more seriously damaged, and in others the fetus bears the brunt of the disorder.

Physiologic changes in the gastro-intestinal tract occur, and often pathologic states result, with salivation and excessive vomiting, which produce profound metabolic disturbances and toxemia in the mother, which may result in her death. The fetus seldom succumbs, unless a therapeutic abortion is done or maternal death occurs. This type of case illustrates strikingly the parasitic action of the fetus, which continues to live and thrive to the point of destruction of its host.

Preeclamptic and eclamptic toxemia is another illustration of a condition, probably related to the one previously mentioned, which threatens the health and life of the mother without direct danger to the fetus. Indirectly, of course, the life of the fetus is in serious danger from premature labor, induced labor, placental changes, suffocation and trauma from complications of hurried or artificial labor.

The increased metabolic stress thrown on the mother by the growing fetus not infrequently uses up the reserve of organs that have been previously damaged and have diminished reserve powers. This is best illustrated by the course of events in patients who have damaged hearts, in which the greater amount of physical work entailed leads to exhaustion of the cardiac musculature. The mother suffers irretrievable damage and even death. The fetus may be born prematurely and suffer damage incident to labor, and in severe cases may suffer in utero from impaired gaseous inter-

change. A similar occurrence, but of a more chemical character, takes place when the kidney reserve is low. These organs are unable to carry the combined fetal and maternal load, and a crisis occurs, with definite and permanent damage to these organs and direct or indirect fetal injury.

Conditions of the mother of an infectious character may result in damage not only to her, but to the fetus. The placenta acts as a fetal defense organ, but sometimes these barriers are broken down and the fetus is infected. Apparently, there is great difference in the transmissibility of infections from mother to fetus. It is definitely known that certain acute infections can be transmitted through the placenta and affect the fetus. It is obvious that the organisms must be present in the maternal blood or lymph streams or exist in the uterus itself before it is possible for them to pass through the placenta. Doubtless the ability of organisms to invade and persist in the maternal blood is a factor of great importance. Some clinical experiences would lead one to believe that the importance of some streptococcic infections in relation to disease of the embryo and fetus is not yet fully realized. Apparently, the size of the infecting organism is not an important factor, as the spirochete passes through with ease unless there is some undiscovered precursor that may transmit syphilis.

Two infectious diseases stand out prominently in their relation to pregnancy. One is tuberculosis, which rarely infects the fetus in utero, and the other is syphilis, which is transmitted to the fetus so frequently that it constitutes one of the chief causes of intra-uterine fetal disease and death. It might be well to mention that syphilis is not now considered to be a great factor in the production of abortion, as the fetus is rarely seriously involved with disease until the latter half of pregnancy.

Another point worthy of consideration is that syphilis does not have to be active to be transmitted to the fetus. There is a tendency toward the belief that syphilis is much more a congenital than an hereditary condition. This point of view is important, as congenital syphilis is so readily treated through the mother. The placenta transmits and stores the arsenical preparations used in the treatment of this disease, and the fetus responds much better to intra-uterine treatment than to postnatal remedies. The syphilitic fetus seems to exert no influence on the course of this disease in the mother.

Tuberculosis is rarely seen in the fetus, but it is quite common in the exposed infant. While opinions differ somewhat, it seems to be generally agreed that pregnancy exerts a harmful influence on the tuberculous patient. It is quite universally accepted that the tuberculous woman should not become pregnant until the process is definitely healed. The opinion is now becoming well grounded that the patients are not treated most effectively by therapeutic abortion, but respond better to other accepted methods of treatment.

It should be stressed that there is a definite tendency to abortion, fetal death and premature labor in the presence of acute infections. Such diseases should be diagnosed early and carefully treated during pregnancy.

The hazards of infectious diseases for the mother, the fetus, or both, are not generally appreciated. Even mild attacks have a definite menace; when prophylactic measures are possible, they should be utilized, and when they are not, early recognition should lead to the prompt institution of rest and other indicated methods of treatment.

Except in cases in which the pregnancy terminates prematurely or the fetus dies in utero, it is impossible to estimate the amount of damage to the fetus unless it carries definitely recognizable evidence of the disease into its extra-uterine life. This postnatal evidence is often obvious in such diseases as syphilis and variola.

The transmission of immunity from mother to infant is an important question, and it has been thought that the development of racial immunity to certain epidemic diseases may be proof of the transmission of such an acquired immunity. There is apparently some transmission of immunity to the offspring, but whether it is active or passive has not been finally determined. It is probable that there is not only a transmission of immunity in utero, but also through the mother's milk.

Pregnancy is often complicated at its conclusion by an intentional or unintentional premature termination. It should be definitely understood that pregnancy is a physiologic and a cyclic condition, which may become pathologic through any factor that causes dysfunction or disturbs the cycle. Such a dysfunction or cyclic disturbance reacts unfavorably on both mother and fetus. A premature ending of the pregnancy is never physiologic for the mother and is most certainly pathologic for the fetus. Labors prior to the period of fetal viability obviously lead to fetal destruction. The process of premature parturition is often serious for the mother and frequently has sequelae that are damaging and dangerous. Premature labors after fetal viability are not necessarily fatal to the infants, but there is a high morbidity among the survivors, whose extra-uterine life is tremendously complicated. The latter part of pregnancy converts prematurity to maturity not only in an anatomic but also in a physiologic sense, which is more important because the adaptation from intra-uterine to extra-uterine life is much more a physiologic than an anatomic process.

OTHER CHANGES

Many maternal changes that occur during the latter part of pregnancy, especially those of the genitalia, are preparatory for labor and the puerperium. The proper timing of the onset of labor, with reference to the physiologic ending of pregnancy, is of the greatest importance for the maintenance of normal relations between mother and fetus.

The changes that take place during the latter part of pregnancy consist of retraction, thinning or softening of the lower uterine segment, cervix and vaginal tract. These changes are accompanied by the adaptation of the fetal presenting part to the pelvic inlet. These changes enable the tissues to resist trauma more effectively. During this period maternal fluids and migratory and possibly reticulo-endothelial cells localize and proliferate in this region and become potent factors in the defense mechanism of the mother against infection.

There is no normal labor except one which begins at the cyclic ending of pregnancy, in response to some stimulus probably of a hormonal character. The drug or mechanical induction of labor at any period of pregnancy must be regarded as pathologic and should be avoided except for strict indications dictated by the best interests of the mother and fetus. Some methods alter their relations less than others, and a minimum of disturbance should be secured for the safety of both.

The interrelations of the fetus and mother during labor are delicately balanced and intimate. The mechanics of labor, affecting as they do the two individuals, involve the dynamic and adynamic forces

that accomplish the passage of the fetus through the birth canal. The fetus and the bony and ligamentous pelvis are passive in this mechanical process. The soft tissues with their elastic and neuromuscular tissues are the dynamic powers. Any variations from the maternal adynamic forces, such as an abnormal pelvis, or from the similar fetal forces, such as malposition, naturally produce abnormal mechanisms. This disturbs the normal interrelationship and may cause dire results for fetus, mother or both.

Disturbed dynamic powers, whether primary or secondary, are frequently associated with pathologic adynamic forces and serve to further complicate the picture. Any disturbances of the active forces during the first stage of labor are apt to be especially serious. These variations from normal may arise without extraneous influences, but intervention of various kinds produces much of the morbidity and mortality seen in mothers and infants. Injudicious use of anesthesia, of oxytocics and of operative procedures during the first stage causes marked disturbances of the normal relations, with resultant trauma, hemorrhage and infection in mother and infant. The second stage of labor admits of intervention with the probability of much less damage to mother and fetus. In some abnormal cases, less damage results to both from timely and appropriate intervention than would occur without it. Disturbed relations materially increase the dangers to mothers, who may become sick and die as the direct or indirect result of trauma and hemorrhage, both of which predispose to infection.

When factors lead to abnormal relations, fetal complications ensue which may cause a dead-birth or death in the neonatal period, usually as the result of injury or suffocation. Disturbances of respiration in the newly born infant should be regarded as a symptom, generally of some intracranial injury, which has been produced either by a short but violent labor, a prolonged but eventually spontaneous termination, or, lastly, but not infrequently, by an instrumental or a breech delivery or a version and extraction. Prematurity and immaturity of the infant with its greater fragility of tissues predispose to these injuries of the central nervous system and of other tissues and organs. Maternal injuries are obviously a frequent accompaniment of these fetal injuries, as the same factors tend to produce both.

The postnatal relations are not so intimate and vital for either the mother or the infant, as with the establishment of respiration the latter begins its extrauterine life, which can continue even though the mother succumbs, provided a maternal substitute is available. Protection from harmful external influences and the supplying of nutriment can be secured from other than maternal sources. These relations must be obtained and maintained by some means or other.

The death of the infant may leave behind a mother whose full function has been impaired and who has to make physical, psychic and other adjustments to life.

These losses, through disturbed interrelationships, have a definite and serious effect on family and community life. These relationships are affected by the heredity of the parents, by the growth and development of the potential mother, by the character of the germ cells, by the maternal environment throughout pregnancy, by the critical period of parturition and, to a lesser degree, during the postpartum and postnatal periods.

ABERRATIONS OF EYES AND LENSES

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Defects of refraction in the eye and in lenses have been named from the points of view of those who first observed them. There were spherical convex lenses two thousand years ago, called "burning glasses" because of their use to light fires. The 4 D. convex lens of rock crystal, found by Layard in the ruins of Nineveh, may have been called a "sight saver" by the man who made it, when he found that it lengthened his years of useful work. The Greeks, who studied and watched the symmetry of the face, naturally called myopia the near-sightedness they tried to overcome by narrowing the space between the lids. Presbyopia was the name for the defect of sight that came with age and caused crow's feet at the corners of the eyes of old men.

The lens grinders found surfaces departing from the shapes they tried to produce, and even the spherical shape at which they aimed was not the ideal shape to bring light to a perfect focus. The lens grinders included Roger Bacon, who sent a lens of his own making to Pope Clement IV; Sir Isaac Newton, whose interest in optics began with the grinding of lenses; Spinoza, who made lenses, although he was more famous as an ethical philosopher, and Leeuwenhoek, who, from making microscopes, proceeded to use them for the study of minute anatomic structures. The departures from true form produced various defects of refraction that limited the usefulness of the optical instruments; from the Greek word meaning to wander, they were naturally called aberrations. The most serious of the defects were those that produced undesirable separations and mixtures of the colors found in sunlight, "chromatic aberrations," and those that were caused by spherical surfaces, "spherical" or "monochromatic" aberrations.

Thomas Young found that his own eye focused on its retina, the rays diverging vertically from a point 10 inches (25.4 cm.) from the cornea, and horizontally from a point 7 inches (17.7 cm.) from the cornea. Rays coming from any point could not be focused, that is, brought together at a point. Two focal lines, one horizontal and the other vertical, were the nearest that the rays could be brought together. The astronomer Airy noticed that he could see a star as a point of light with his right eye, but that with his left it appeared as an elliptic blur, with its long axis about 35 degrees from the vertical. When he had a concave cylindric lens properly ground for the left eye, which had been defective from childhood, he saw as well with it as with the right eye. Airy's collaborator, Professor Whewell, suggested the word astigmatism to designate this defect, from two Greek roots meaning without a point, or focus. This form of defect, which could be corrected by a cylindric lens, was called "regular astigmatism." Later it was learned that there were eyes that were unable to focus rays to a point, but which could not be corrected by any cylindric lens; defects of this kind were called "irregular astigmatism."

A broader recognition of the defects of refraction in the eye made it clear that they depend on faulty curvature of the refracting surfaces, excessive or deficient lengths of the eyeball or an irregular index of refraction. In a large part of such cases, the essential fault

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is a disproportion between the length of the eyeball and the focal distance of the refracting surfaces. Donders suggested that the ideal refraction of the eye was that in which the refracting surfaces were perfectly proportioned to the length of the eyeball. This condition he called emmetropia, meaning true proportion. For lack of this, all eyes having defects of refraction were said to have ametropia. If the eye is too short its defect of refraction is called hyperopia; if too long, myopia. For astigmatism he accepted the term used by Airy, and classified aberrations as chromatic and monochromatic.

These different terms are still in use in the literature on refraction, but their meanings overlap and vary, so that they do not secure a clear understanding of the subject. For instance, spherical aberration is essentially an astigmatism. It prevents rays that come from a point being focused to a point. The curved surface of a cylindric lens, or a toric surface, will cause essentially the same kind of aberration, or astigmatism; it will cause a homocentric pencil of rays to become heterocentric, tending not to a point, but to different points of a line. It will make for a better understanding of the whole subject if one speaks of some aberrations as chromatic, and of others as due to obliquity of surface; however, one must recognize that the two kinds run into each other.

Chromatic aberration arises from the different refrangibility of light of different colors. It is closely connected with the refraction of light. But dispersion of color is not, as Newton thought, exactly proportioned to refraction. Chromatic aberration causes a problem in all optical instruments that require strong lenses. It is overcome by using materials with different powers of dispersion. These can be used in such a way that the chromatic effects will neutralize each other. In the eye, chromatic aberration is slight. It becomes of practical importance only with quite strong correcting lenses.

ABERRATION OF OBLIQUE SURFACES

Aberration of oblique surfaces is best understood by simple experiments. A prism is used before the eye for the change in direction it produces in the rays passing through it. It is best numbered by the amount of this change, expressed in degrees, centrads or prism diopters. The amount of such change depends on the obliquity of the surfaces of the prism to the rays passing through them. It is numbered according to the deviation produced when the prism is in the position of "minimum deviation." This position is when its surfaces make equal angles with entering and emerging rays. The position is shown in figure 1; the rays in the prism are perpendicular to the plane bisecting the refracting angle, indicated by the dotted line. If the prism is swung either way from this position, its effect increases.

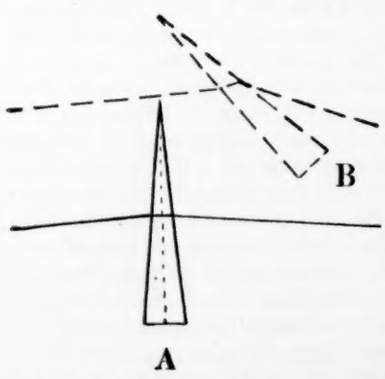

Fig. 1.—Prism strength. *A* indicates "minimum deviation"; *B*, refracti e effect increased by obliquity.

EXPERIMENT 1.—Take a no. 2 prism from the trial case. Its effect is approximately the same, whether it is numbered for 2 degrees of refracting angle, 2 centrads of deviation or 2 prism diopters of effect produced on light passing through it. Hold the prism before the eye so that its thin edge (the refracting angle) is parallel to the side of a door, or window frame, across the room, or the corner of a building across the street. The line looked at should be seen above and below the prism, and through it. The part seen through the prism will appear displaced laterally, as compared with the parts seen above and below it. Now rotate the prism about a line parallel to the refracting angle of the prism and parallel to the line looked at.

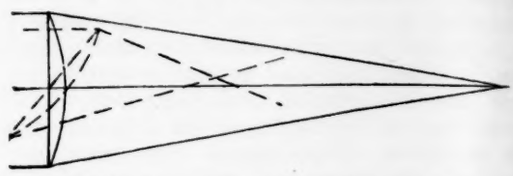

Fig. 2.—Cylindric lens. The solid lines show rays perpendicular to the lens; the broken lines, the effect of rotating the lens about its axis.

At first the part of the line seen through the prism will remain unmoved. As the prism is rotated farther, the part seen through the prism will begin to move slowly toward the thin edge of the prism. As the prism is turned farther, the line will move faster until it goes over to the edge of the prism and disappears. Whichever way the prism is turned, the line moves toward its thin edge. The obliquity makes it act as a stronger and stronger prism. Usually the prism must be rotated 10 or 12 degrees before the movement is perceptible, but when it is turned 40 degrees it equals the no. 4 prism, and the displacement of the line is doubled. When the rotation is 60 degrees, the effect is equal that of a prism numbered 10, for the position of minimum deviation; at 70 degrees it has the effect of a prism numbered 20.

A single trial of this experiment will convince one of the importance of the wandering off, the "aberration" of refraction, due to obliquity of the refracting surface. However, its importance justifies seeing it from other points of view.

EXPERIMENT 2.—Take a planocylindric lens (a convex 2 D. lens was used in this case, but any strength may be used; the same increase of strength is obtained with a concave cylinder). Hold it where it will receive the light from a small source, distant enough to make the rays practically parallel. An arc street light is about the best source. The direct light of the sun may be used, although the sun presents a disk one-half degree in diameter instead of a point. Hold the plane surface of the lens perpendicular to the incident rays. The light will be focused into a line parallel to the axis of the cylinder and one-half meter from it. It can be focused on a card held in the proper position. This line is seen at the middle of the shadow, because all the light passing through the lens is refracted to the focal line, leaving the rest of the circle in comparative darkness.

Slowly rotate the cylinder about its axis, which is still kept perpendicular to the incident pencil of the rays. At first no change is seen in the focal line. When the rotation has reached 10 or 12 degrees, the line becomes less distinct. It is again made distinct by bringing the card a little closer to the lens. The focal distance has been shortened—the lens made stronger—by its obliquity. On continuing the rotation to 40 degrees, the strength of the lens is increased to 5 D., and its focal distance is reduced to 20 cm. When the rotation reaches about 60 degrees, the effect of the 2 D. lens is 10 D., and the focal distance is reduced to 10 cm. This continues until the focal line fades out by total reflection within the lens.

As the obliquity of the lens increases and the focal distance decreases, a new cause of aberration becomes effective. One half of the lens comes nearer to the card on which the image is formed, while the other half goes farther away from the card than the axis of the lens. This modifies the image formed on the card. From one half of the lens the light may be fairly focused into a line parallel to the axis, but from the other half the light will not yet be focused to a line, or it will already

have passed the focal line and be diffusing from it. In either case there are seen a line and a diffusion area, shaped more or less to an oval or a semioval. This form of diffusion image may be puzzling to the experimenter who sees it for the first time and does not perceive the reason for it. Its shape and distinctness are affected by whether the planosurface or the curved surface of the lens is turned toward the source of light. The focal line is the position in which the relations of the rays coming through the lens are reversed. Closer to the lens the lower rays are those that come through the lower half of the lens; beyond they have become the upper rays. At any position of the card some of the rays have already passed their focus, or some of them have not been brought to a focus. The position of the line on the shadow of the lens varies with the relative positions of the lens and the screen card.

Attention has not heretofore been drawn to this aberration of a rotated cylindric lens. Familiarity with it helps in the understanding of so-called spherical aberration, which is essentially the same as that of the cylindric lens. A section of a cylinder in the meridian perpendicular to its axis gives a section of its curved surface; that is, part of a circle. A section through the center of a spherical lens, in any axis, gives the same kind of a curve. If this kind of aberration is called spherical aberration, the aberration of a cylindric lens is also spherical aberration. It is better to class both with the aberration produced by rotating a prism or a plate of glass with plane parallel sides, the aberration of inclined surfaces.

Spherical aberration, mentioned in all books on optics, is the insurmountable obstacle to ideal lenses. It has not been given the simple, comprehensive explanation that recognizes its dependence on obliquity of surface. On account of it, a perfect spherical lens never can give a perfect focus. Because it is the easiest to grind, the spherical form has been used for lenses from the time of the old gem grinder of Babylonia. Mathematicians who have studied optics have suggested other forms of surface that could furnish perfect or ideal focusing of light, but these have not proved practicable for any general use. It is almost impossible to produce exactly the surfaces planned, and if they were exact, slight movement of the eye from the designed axis of the lens would destroy any advantage it was expected to have. The aspherical lens of Gullstrand is an attempt in this direction. However, any one who has worked with it knows how exactly it must be placed to get the slight advantage it is supposed to have over a planospherical lens. Spherical aberration has been chiefly overcome in optical instruments by partly neutralizing the aberration of one lens by that of another. This was the plan used by Huygens in the eyepiece for the compound microscope that is known by his name.

The essential facts of spherical aberration are illustrated in figure 3, which shows the section of a planospherical lens with all the refraction at its one curved surface. The figure has been drawn to scale to show the relative effects of different parts of the surface produced by differences of obliquity. The axial ray comes perpendicular to the surface and is not refracted. Any ray close to this and falling on the curved surface, with an angle of incidence of 1 degree, is refracted only about twenty seconds and intercepts the central ray at *A*, the principal focus of the lens for rays near the axial ray. Rays farther from the axial ray and falling on the curved surface more obliquely are focused nearer the lens, as at *B*. Those coming through the periphery are focused still nearer the lens at *C*. Rays from a single point being focused to different points make this a case of astigmatism, *A-C* being the focal line. What is now known as regular astigmatism was classed by Helmholtz as a special form of monochromatic aberration.

Rays coming in the opposite direction and falling first on the curved surface are but little affected by spherical aberration. Such rays are refracted toward a focus on entering the glass, and on leaving the glass are refracted somewhat in the opposite direction. The latter effect is greatest at the periphery, decreasing toward the center, and thus to some extent neutralizes the spherical aberration. The stronger the lens, the greater is the effect of the refraction at the plane surface. If the lens has a strength of 16 D., the aberration is less than 0.25 D. Near the limit of size that can be given, as fixed by the limiting angle for the refractive index of the glass used, the refraction at the emergent (plane) surface of the lens more than overcomes the spherical aberration, and the minimum aberration is obtained by making the emergent surface slightly convex.

For all forms and strengths of lenses to secure the minimum of spherical aberration, the more convex, or less concave, surface should be turned from the eye, and the more concave, or less convex, surface toward the eye. The biconvex and biconcave lenses that were formerly found in all trial cases produce spherical aberration at both surfaces. The amount of aberration at each surface is that of a lens of about half the strength, or the amount of a similar surface at half the distance from the optical center of the lens. This is less than the aberration produced by a planolens when parallel rays fall on the plane surface, but is much greater than that of the planolens properly placed to receive parallel rays on its curved surface. The biconvex lens produces its minimum aberration when the source of light is twice as far from the lens as its principal focus, and the rays divergent from the focus are converged to a point equally distant from the lens on the other side, corresponding to the position of minimum deviation for a prism.

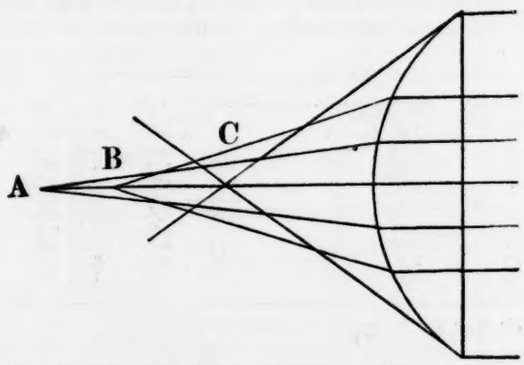

Fig. 3.—Spherical aberration of rays falling parallel on plane surface. The rays are focused along the axis from *A* to *C*.

EXPERIMENT 3.—This experiment, to visualize the facts of spherical aberration, is performed with a small bright source of light placed at such a distance that the rays will fall on the lens nearly parallel. Take the strongest convex lens from the trial case, and use a white card for a screen. Hold the card close to the lens and look at the circle of light that comes through the lens to fall on the screen. Held against the lens this circle seems evenly illuminated, but as the card is drawn away from the lens, the edge of the circle gets brighter. The most peripheral rays—those most refracted—turn in, so that they cross the next rays, as indicated in figure 3. As the card is moved farther from the lens the circle gets smaller, but con-

tinues to have a bright ring at its circumference, the more peripheral rays continuing to cross the less peripheral. When the card approaches the focal distance for the lens, a bright point appears at the center of the circle, where the most peripheral rays are brought to a focus in the center of the small circle of light still produced by the rays that have passed through the lens in its central portion. Before the whole circle has narrowed to a point—the proper focus of the lens—the rays refracted by the periphery have already crossed and are becoming diffused. These rays light up an area about the point of light, which is circular but has no bright definite edge. When the rays have all been focused and are diverging, this area of light with its indefinite edge continues to grow larger as the card moves farther from the lens. If the planolens is turned with its curved surface to the light and its plane surface toward the card, the greatest decrease in the aberration can be observed.

With a biconvex lens the bringing of the source of light toward the lens will decrease the aberration as the card moves farther away. When light and image are equally distant, the aberration will be least, but bringing either nearer than the other causes the aberration to increase. The aberration of oblique surfaces is the same whether the surface is convex or concave, but cannot be so easily demonstrated for the concave lenses.

Spherocylindric aberration is a name that may be given to the aberration of oblique surfaces, which is most important to all who wear or prescribe spectacles. Attention was called to it in 1887 in a paper read before the Section on Ophthalmology of the American Medical Association.[1] The subject so impressed Dr. John Green, the elder, that at the age of 59 he took up the study of mathematics, and published a paper entitled "Variations in Power of Lenses in Oblique Centrical Refraction."[2] This type of aberration, however, has never been sufficiently impressed on the medical profession. Every spherical lens is bounded by a portion of the surface of a sphere. A circle drawn on one side of a large ball will help to illustrate what happens to light falling on such a surface. If the pencil of light falls on the surface so that one ray, the axial ray, is directed toward the center of the sphere, perpendicular to the surface, there will be no aberration of this kind, but if the lens is turned so that it receives the pencil obliquely, aberration of oblique surfaces will occur.

Degrees of Obliquity *	Cylinder 1 D. Effect	Spherical 1 D. Effect
0	1.00 D. cyl.	1.00 D. sph. 0.00 cyl.
5	1.01 cyl.	1.00 sph. 0.01 cyl.
10	1.04 cyl.	1.01 sph. 0.03 cyl.
15	1.10 cyl.	1.02 sph. 0.08 cyl.
20	1.17 cyl.	1.04 sph. 0.13 cyl.
25	1.30 cyl.	1.06 sph. 0.24 cyl.
30	1.44 cyl.	1.09 sph. 0.36 cyl.
35	1.69 cyl.	1.12 sph. 0.56 cyl.
40	2.01 cyl.	1.16 sph. 0.83 cyl.
45	2.46 cyl.	1.22 sph. 1.24 cyl.

* This table can be verified by experiment.

In the oblique position of the lens changes of strength occur in two meridians at right angles to each other, which create regular astigmatism. In one meridian, in the plane in which the lens is rotated, its refracting power is increased, just as the refracting power is increased in a prism or a cylindric lens rotated about its axis. In the meridian at right angles to the first one, the curve comes to act as a smaller circle of the sphere, a circle the plane of which passes farther and farther from the center of the sphere. So in both these principal meridians the refracting power is increased, but unequally so, more in the first meridian than in the second. This causes the lens to act as a stronger spherical lens to which has been added a cylindric lens. The aberration thus produced by different degrees of obliquity in a 1 diopter spherical lens is compared with the effect of like obliquity in a planocylindric lens in the accompanying table, which is quoted from the former paper.

EXPERIMENT 4.—Use the same arrangement and screens as for experiment 2, and take a 2 D. spherical convex lens. Starting with the lens perpendicular to the pencil of rays, turn it gradually to an oblique position. With 8 or 10 degrees of obliquity the image becomes slightly indistinct; it is made distinct by moving the screen a little nearer to the lens. When the lens is turned a little more, the image, instead of being a point or a small circle of diffusion, is found to be longer in one direction than in the direction at right angles thereto. On bringing the screen still closer, the image focuses into a line in the plane of rotation, and still closer, in another line at right angles to that plane. The action of the obliquely placed spherical lens has become that of a spherocylindric lens. As the rotation is continued, both the spherical and the cyclindric actions of the lens become stronger, but the focal lines are less sharp and distinctive, because of the increased spherical aberration and the half of the lens being brought by rotation nearer to the screen than the other half, causing the ovoid diffusion images previously alluded to in the experiment with a cylindric lens.

Chromatic aberration cannot be broadly separated from the aberrations produced by obliquity of surfaces. In spectacle lenses the colors produced are noticed only through parts of the lenses presenting the greatest spherical aberration, even when glass that has a wide dispersive range for the different colors of the spectrum is used. It is evident that aberration from oblique surfaces must lead to separation of the colors present in white light, and in high spherical aberration this separation becomes visible. When parallel rays are rendered divergent by a strong concave lens and the enlarging pencil of light is received on a white screen, the color rings appearing at the edge of the circle are a striking evidence of the aberration by obliquity of surfaces. The possible annoyance from color aberrations is reduced to insignificance by the far greater sensitiveness of the retina to the light of the center of the spectrum—green-yellow—as compared with light from either the red or the violet end. Adaptation to the stronger light prevents perception of the colored lights most widely separated from it. Color in a spectacle glass is chiefly important as a "selling point" for glasses of unpublished chemical formulas sold under copyrighted names, as are patent medicines.

Aberrations in the Eye.—The aberrations of oblique surfaces that cause so much trouble with optical instruments are often guarded against in the structure of the human eye. The anterior surface of the cornea, as a whole, is not spherical, but is flattened toward the periphery in a way that prevents most of the aberration that would be caused by a spherical surface of such great curvature. The central optical area of the cornea, which approaches a spherical curve, is placed so that it receives rays almost perpendicular to the surface, under conditions that conform most nearly to the conditions laid down by Gauss as the ideal conception for a lens. The pupil restricts the pencil of rays to the exclusion of those most disturbed by aberration. The crystalline lens has its shape rather compensatory for that of the cornea, and its refraction is supplemented in the high index of the nucleus. Contrary to what is sometimes

1. Jackson, Edward: Effects of Obliquity of the Correcting Lens to the Visual Axis, J. A. M. A. **9**: 645 (Nov. 19) 1887.
2. Green, J.: Tr. Am. Ophth. Soc. **7**: 329, 1895.

stated with reference to all the needs of vision, the human eye is a superior optical instrument.

Yet when it is examined by skiascopy with the pupil dilated, the eye always shows evidence of aberration. The most common defect is one closely related to the spherical aberration of convex lenses. The periphery of the dilated pupil is less hyperopic or more myopic than the center. This may not be perceptible within the central visual zone, about 4 mm. in diameter, that is always in use when the pupil is contracted by strong outdoor light or with convergence and accommodation for near work. The balance of mutual adjustment between corneal refraction and that of the lens is never perfect in the peripheral portions. In the majority of eyes, as in a convex spherical lens, the center of the pupil is more hyperopic and the periphery less hyperopic, like ordinary spherical "positive aberration." In a minority of eyes, this condition is reversed and the center is more myopic, "negative aberration." The latter state is most striking in conical cornea, in which the apex of the cone is highly myopic and the periphery of the pupil is little so, or even hyperopic. Low degrees of this form are much more common than characteristic cases of conical cornea. The senile lens sometimes shows such a change, which may be followed by cataract. This kind of negative aberration is generally the basis of "second sight," of which something has been known for hundreds of years.

IRREGULAR ABERRATIONS

The aforementioned forms of aberration are incident to what are called surfaces of revolution. A surface that can be ground by the turning of a spherical tool or a wheel is the only kind that is practicable to produce in large quantities for spectacle lenses; mathematicians and lens grinders have generally fixed their attention on such surfaces. The surface of the cornea was first considered to be spherical. Then its flattening at the periphery was noticed and it was considered a parabolic surface. Such surfaces are symmetrical with reference to the axis of revolution. When many corneas had been measured with the ophthalmometer, it was demonstrated that the corneal curvature was not that of a surface of a revolution, and the mathematical conception of a "tri-axial ellipsoid" was introduced as a better explanation of its nature. I called attention to the positive and negative forms of spherical aberration as "symmetrical astigmatism." [1] However, at the suggestion of Dr. John Green, Sr., I changed the title to "symmetrical aberration." All of the forms of aberration that have been discussed are symmetrical aberrations, belonging to mathematical surfaces of revolution.

There are other forms of optical aberration that are also of practical importance. Two of these have been widely recognized in skiascopic examinations by the movements of light and shadow that they cause in the pupil—the scissors movement and the pendulum movement. The scissors movement shows two light bands in the pupil, more or less parallel and approaching, or separating from each other, according to the direction the mirror is turned. The pendulum movement is shown by a single band of light, which does not keep the same meridian as it moves from side to side, or up and down, but swings like a pendulum around a center, much as the light swings around the apex of the cone in a case of conical cornea. These aberrations are not symmetrical, but depend on forms of surface that cannot be produced like a surface of revolution.

The scissors movement, or scissors aberration, can be caused by a surface of the cornea or of the lens that curves more in one portion than another. With the retina in a certain position or a certain lens before the eye, the movement of light and shadow in one part of the pupil is that of hyperopia, and in the other part of the pupil, that of myopia. This may be understood by figure 4, in which *R* represents the position of the retina.

This kind of aberration, due to corneal curvatures, may be found after extraction of cataracts, and sometimes after a broad iridectomy for glaucoma. The region near the corneal incision bulges, which makes a flattening toward the central part of the cornea. However, in such cases it is not often of practical importance, because it does not show in the central part of the cornea used for visual purposes. When the central pupil does show the aberration of scissors movement, the fault may be in the unequal curvature of different parts of the lens surfaces, since the ophthalmometer shows no deformity of the corneal surface. In such cases the practical importance of the aberration for the visual zone is that the region of the pupil that will be used when not dilated is the part that must be corrected. The two bands must be made to meet or to have their neutral zone in that part of the pupil.

The pendulum swing of light and shadow in the pupil is best understood as indicating conicity of the refracting surfaces, with the apex of the cone outside the region of the pupil, and generally outside the cornea, in the direction indicated by the converging meridians. The practical point of importance is to determine the meridian of the band when it swings across the central visual zone. The band may swing from the meridian of 70 degrees on one side, to that of 105 degrees on the other. But if its meridian, when it covers the visual zone, is 95 degrees, that is the direction to place the axis of the cylinder when one starts to make the subjective test.

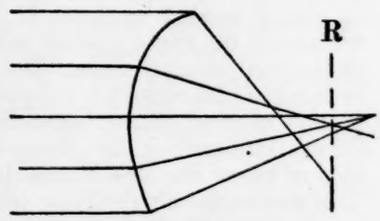

Fig. 4. — Irregular aberration causing scissors movement in the pupil. *R* indicates the position of the retina.

Accidental aberrations would be a good name for those that result from distortions of the corneal surface in small areas due to injuries by trauma or by ulcers, or those that impair the refraction of the crystalline lens by changes in the index of refraction of the lens in small areas. These changes may end in localized opacities in the lens, but often they impair vision without producing actual opacity of the lens substance. The irregular refraction may appear in radiating sectors of the lens, which sometimes go on to radiating opaque striae. One must remember that its influence on light is the most delicate test there is for the chemical constitution of a transparent substance. Some of the changes in the crystalline lens may be temporary. Even when great enough to cause a refractive aberration mistaken for opacity of the lens, the changes may pass away and leave the impression on the clinical observer that an opacity has been absorbed. Temporary accidental aberrations should be systematically looked for in the experimental study of the etiology of cataract. The accidental aberrations due to corneal lesions should be studied in the period of recovery from corneal opacities.

DEALING WITH ABERRATIONS

About a century ago Gauss worked out his theory of refraction by lenses. It is an academic theory attractive to mathematicians, and applies to a lens only so far as it is not a lens. It got rid of aberrations by ignoring them. It conceived of refraction by a lens as occurring at one plane surface, and it applied only to rays perpendicular to that surface, or so nearly perpendicular that their obliquity could be ignored, as mathematicians wipe out differentials of a higher order in calculus. To vary an old conundrum, when is a lens not a lens? The answer is when it conforms to the Gauss theory. By his assumption, aberrations of obliquity do not exist. The mathematical discussions based on the theory of Gauss may be read in Helmholtz' "Physiologic Optics." [3] A more valuable conception of the importance of aberrations is obtained by the experiments detailed in this article, which point directly to the effects of necessary departures from the Gauss theory and the practical precautions that limit the aberrations of oblique surfaces.

It will be seen that up to an obliquity of 10 degrees, the effects are scarcely perceptible, and only when it rises to 15 degrees do they become important, rising to one-tenth the strength of the lens. Greater angles of incidence are avoided by so shaping and placing the lenses before the eye that the ordinary movements of the eye will keep its visual axis this near to the axis of the lens. The posterior surface of the lens must usually be placed one-half inch (1.27 cm.) in front of the surface of the cornea, which will be 15 mm. in front of the first principal point. This will be about 28 mm. in front of the center of rotation of the usual eyeball. In this position of the spectacle lens, the rotation of the eye 15 degrees in any direction will cause the visual axis to pierce the lens 8 mm. from its optical center. This makes the circle of the lens 6 mm. in diameter, in which the aberration for even a flat biconvex or biconcave lens will be only one tenth of the refractive power of the lens and practically negligible. With a properly turned planolens, the aberration will be much less than this, and the region of the lens that can generally be used will be correspondingly larger. With any reasonably curved meniscus lens, the part of the lens that can be freely used will be still larger, over the whole width of the lens, even when the head is held rigidly fixed and the field of regard is covered entirely by the rotation of the eyeball in the orbit.

When I wish to change the direction of the eyes, I begin to do so by rotating the eyeball in the orbit. But when this has proceeded to 12 or 15 degrees, it is almost always supplemented by turning the head in the desired direction. Turning the head always turns the direction in which the glasses face. Turning the direction of fixation to any extent entails less than 20 degrees of obliquity of the lens surfaces and a correspondingly important amount of aberration. Hundreds of observations on the turning of normal eyes show this general limitation of the turning of the eyes in the orbit.

It is possible to sustain perfectly good binocular vision for a large amount of work with the eyes without using anything like 20 degrees of rotation of the eye in the orbit. A man, aged 46, who had been an accountant and office worker for thirty years, suffered from a "sun stroke." He had almost complete bilateral ophthalmoplegia. He had less than 5 degrees of vertical excursion of either eye and less than one-third the normal lateral movements. Twenty years later, with 10 degrees of prisms base out for distance and 3 degrees base in for reading, he had good binocular vision, could do his near work and enjoyed traveling. Probably most persons using glasses could learn to use their eyes without more than 10 degrees of rotation of the globe in the orbit, and with no more difficulty or annoyance than they experience in becoming accustomed to any new pair of glasses for a change in the fashion of frames or coflexures. When looking obliquely, so that the effect of obliquity can be noticed, the turning of the head begins to lessen the aberration.

When the prescribing of glasses for hyperopia and astigmatism began, the opticians were fairly familiar with the effects of aberration in strong glasses and had a practical understanding of the importance of reducing obliquity of refracting surfaces. The empiric rules of turning the convex, or more convex, surface from the eye and the concave, or more concave, surface toward the eye were followed by the more competent opticians. To make this plan more effective, periscopic lenses having a base curve of 1.25 D. were put on the market as soon as the metric system of numbering was adopted. Later the so-called toric form, with a base curve of 6.50 D., was widely adopted. Still later, lenses still more strongly menisciform were introduced under copyrighted names, and extravagant claims of their superiority were pressed on the attention of ophthalmologists and the public by specious advertisements, much as the general public is influenced by the copyrighted names but unpublished formulas of the so-called patent medicines.

The essential precaution to prevent and limit the aberration of oblique surfaces is to keep these surfaces as nearly perpendicular as possible to the rays that pass through them. The prism must be kept near its position of minimum refraction, the rays in the prism falling perpendicular to the plane that bisects its refracting angle. With lenses the rays should be nearly as possible perpendicular to a theoretical or assumed curved surface, half-way between the two refracting surfaces of the lens. An understanding of this will make one safe from unjustified claims of superiority made by eager salesmen for the lenses they wish to sell.

Perfect coflexures for a meniscus lens are impossible. The ideal would be a curve with its center at the center of rotation of the eye, the equivalent of the Gauss lens, with the refraction all in one surface. Besides the departure from this to a convex curve in front and a concave curve behind would be the variations of different depths of the eye in the orbit and differences of the depth of the center of rotation in different eyes. The best one can do is to approximate the impossible ideal: (1) making each part of the surfaces as nearly perpendicular to the rays to be refracted by them as is practicable, and the proportions of the two surfaces such that the necessary aberration of obliquity in one will partly neutralize the aberration of the other; (2) placing the lens in such a position in front of the eyes that the necessary changes in direction of the eyes will produce only a minimum of aberration, of which the wearer will usually be unconscious. Every experiment here described shows that when the obliquity begins to change the effect is at first imperceptible and becomes important only when the direction of the eye is altered more than is necessary in ordinary use.

A harmful by-product of the use of copyrighted lenses with curves carefully calculated by "expert"

3. Helmholtz, H. L. F.: Handbook of Physiologic Optics, translated by J. P. C. Southall, Rochester, N. Y., Optical Society of America, vol. 1, p. 57. See Appendixes by Gullstrand, p. 261.

mathematicians (but not published) has been the tendency of opticians to neglect the proper facing of the lenses in the frame—forward for distance and downward for near work, and in general more nearly perpendicular to the stronger part of the lens, which always has the greater aberration and allows the least departure from the perpendicular without aberration of practical importance. During the last year, opticians who fully appreciated years ago the importance of keeping down the obliquity of the lens surfaces have dispensed quite poorly fitted spectacles, showing that they were relying on the curves calculated by expert mathematicians and advertised "clear to the very edge" to save themselves the trouble of thinking about the position of the lenses before the eyes or to make any position that "looked best" optically satisfactory.

"Trifles make perfection, but perfection is no trifle." "The best is none too good" in correcting optical defects of eyes put to strenuous work on tasks more difficult and exacting than the great majority of eyes have been developed to meet and under conditions far from the best for the health and efficiency of the eyes. In the optical assistance of the imperfect eye there has been opened up a field of service that is still incompletely occupied, but which is still enlarging.

The field of irregular ocular surfaces and irregularities of refraction known as irregular astigmatism or irregular aberration must be viewed from the same direction as has conical cornea. The practical thing to do is to substitute a good refracting surface for a poor one through the use of the contact glass, which has now been proved a practical resource for certain aberrations of the eye that cannot be corrected in any other way. Good service in ophthalmology can be rendered only by considering all these possibilities and by meeting them in the most efficient and simple way.

ABSTRACT OF DISCUSSION

DR. HENRY C. HADEN, Houston, Texas: With the advent of the new prescription lenses and the desire for the greater elimination of aberration of oblique surfaces, there came criticism of the trial sets with their biconvex and biconcave lenses and their monochromatic aberration. If one will analyze the question, one will find that there is no cause for fear that the prescription lenses will not conform to the measurements made with the trial lenses. If the trial lenses were made now as they once were, with their numbering representing approximate power or equivalent power, of course conformity could not be obtained by practicable methods. Fortunately, since Mr. Prentice's investigation a number of years ago, the numbering of the lenses in standard trial sets gives their actual power in vertex refraction, which is the reciprocal of the back focus, so that if the back surface of the lens in the trial frame is 14 mm. from the anterior surface of the cornea, the effective power of the spectacle lens should be the same. In measuring the refractive error one must use a combination of lenses; since their surfaces are not in actual contact, the result is not mathematically correct. If, however, the slots in the frames are close together and the final correction is at most two lenses, sphere and cylinder, this error is reduced to a minimum. To minimize the disturbance from monochromatic aberration in using flat trial lenses, the trial lens should be placed vertically before the eye at a distance of 14 mm.; the optical center of the lens should be opposite the pupil, and the normal line of the test card and the 6/6 line, if one works at 6 meters distance, should be on the same level as the eye. If these precautions are observed there will be practically no disturbance from spherical aberration, for the visual line of the patient's eye will coincide with the axial ray. Unquestionably, some prescription lenses are made more mechanically perfect than others. I do not refer to the patented curves but to the actual perfection of whatever shape or construction it is claimed that they have and to the finish of their surface. Unfortunately, Americans demand that a product, be it automobile or lens, must be advertised to be sold. And the makers of lenses advertise. It is no more practicable for the average ophthalmologists to go into the details of the construction of lenses than it is for the general physician to analyze the many synthetic drugs offered by pharmaceutic houses. We should therefore have a committee composed of such men as Dr. Jackson, selected from the various ophthalmologic societies, and made an authoritative part of the American Medical Association. The committee could examine the different makes of lenses and pass on them as the Council on Pharmacy and Chemistry does on pharmaceutic products.

RESULTS IN THE TREATMENT OF ACUTE APPENDICITIS

REVIEW OF 4,270 CASES IN ATLANTA

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It is charged that recently the medical profession has not given the study of acute appendicitis the attention demanded by its frequency and gravity. Judging from the increasing number of papers that have been published on the subject, such a charge is unfounded. According to the *Quarterly Cumulative Index Medicus,* in the five year period, 1916 to 1920, 512 articles on appendicitis appeared in the world's literature, 209 of which dealt with acute appendititis. From 1921 to 1925, 836 papers on the disease were printed, 308 of which concerned the acute variety. From 1926 to 1930, 1,755 papers were published, acute appendicitis being discussed in 533. During the past fifteen years, five papers on appendicitis have been read before this section. The last one was read five years prior to the writing of this paper.

STATISTICS FOR ATLANTA

The present study of the results obtained in the treatment of acute appendicitis is based on a review of 4,270 cases in which treatment was given by 197 surgeons in 8 hospitals in Atlanta during five years, from 1927 to 1931, inclusive. All except 46 of the patients were submitted to operation. Half of this number refused operative treatment, and recovered from the attack. For various reasons operation was postponed in the other 50 per cent of these patients, who were treated conservatively, with 5 deaths.

It is fair to assume that 4,270 represents 95 per cent of the patients treated in Atlanta during this time. The remaining 5 per cent should cover those treated at home and those who were cared for in a few small hospitals the records of which were not obtained. The patients from outside the city, 388, probably make up for the number not counted in the city. Estimating the average population of metropolitan Atlanta for this period as 325,000, 1.3 per cent of the inhabitants suffered from acute appendicitis some time during these five years, or 1 in every 380 persons annually. One-third of the population is colored, and the disease was found to be six times as common in white as in colored people.

CHRONIC APPENDICITIS EXCLUDED

Care was taken to include only the acute form of appendicitis in these figures. The mortality rate in large series has been questioned on the ground that

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the condition was not acute in every instance at the time of operation. In checking the hospital histories for this survey more than 100 charts labeled as acute appendicitis were rejected, because neither the clinical record nor the report from the pathologic laboratory seemed to justify such a diagnosis. In 90 per cent of the appendixes removed in this group the primary pathologic lesion present was reported by the laboratory as acute. The majority of the remaining 10 per cent of specimens did not reach the laboratory, and the diagnosis was made in the operating room on gross appearance. There were a few cases in which the pathologic report was chronic appendicitis, but the clinical course of the illness and the gross appearance of the appendix in the operating room warranted the diagnosis of acute appendicitis.

MORTALITY RATE

The method of reporting mortality rates adopted by insurance companies and departments of public health is the number of deaths among 100,000 population. Thus the United States Bureau of Public Health Service shows an increasing death rate from appendicitis in the registration area, as follows:

1900	9.7
1905	11.9
1910	11.4
1915	12.5
1920	13.4
1925	15.2
1929	15.2

The figures on the mortality rate for Atlanta given by Dr. Frederick L. Hoffman, in the *Spectator* (Aug. 27, 1931) are: 21 per hundred thousand for 1929, and 21.7 per hundred thousand for 1930.

Such figures as these may interest the professional statistician but convey little practical information to the physician or surgeon. What he wishes to know is, how many patients who had acute appendicitis died from the disease? The number of deaths in 4,270 cases in Atlanta was 188, or 4.4 per cent. It has been said correctly by many writers that most of the fatalities in appendicitis result not from the disease in the appendix, but from its immediate complications, such as peritonitis, abscess and ileus. The mortality rate of 4.4 per cent fits well into this statement, as investigation of the

TABLE 1.—*Record by Years*

Year	Patients	Died	Percentage
1927	775	33	4.26
1928	735	44	6.00
1929	804	25	3.00
1930	886	36	4.00
1931	1,071	50	4.60
	4,270	188	4.40

records show that 4 per cent of this death rate was due to complications, and 0.4 per cent was due to appendicitis, including sequelae not caused by the method of treatment, such as pneumonia and cardiac lesions. Thus the probability of recovery if treatment was instituted before complications had time to occur was 400: 1, whereas, after the development of complications the chances might be as few as 25: 1.

The following tables give the number of cases and deaths by years, sex, race, hospitals, age decades and months.

These figures appear to fall in line with similar ones issued from other centers. Usually the preponderance of male patients is greater than that given here. Why the mortality in men is almost twice that in women is not clear.

APPENDICITIS IN NEGROES

Considering the lesser incidence of appendicitis in the colored race, one is reminded of McCarrison's[1] experience in India, where he found no example of the disease among several thousand patients who ate "natural foods" and nothing that had to be preserved. Most Negroes in the south live on such a diet, consisting of cornbread, peas, cabbage and "pot likker" (turnip green juice). Thirty years ago appendicitis was almost a novelty among these people. While the incidence compared to that in the white race is still low, it is increasing, as the colored man abandons his simple food and eats more meat and sugar and foods that have been polished, pickled, frozen, thawed and sterilized.

TABLE 2.—*Record by Sex and Race* *

	Patients	Died	Percentage
Males	2,218	126	5.7
Females	2,052	62	3.0
White	3,984	146	3.6
Colored	286	42	14.0

* Average number of hospital days per patient, for five years, 12.6.

The mortality rate was four times higher in the colored population, for which there are two causes. First, the average length of time consumed in reaching the hospital after the onset of symptoms was one hundred and four hours for colored patients and fifty-one hours for white patients. Second, while the gospel of not taking a purgative for every stomach ache has reached a large mass of white people, it has yet to come to the ears of the Negro. Nearly every colored patient with appendicitis had taken purgatives before admission, generally in large amounts, such as 10 and 12 tablespoonfuls of castor oil. Massive doses of epsom salts also were swallowed in the striving to get rid of the abdominal pain. Sometimes the patient was saved because the salts were vomited. Saline cathartics are particularly pernicious in these cases, since they fill the intestines with fluid, so that when perforation takes place the peritoneal cavity is flooded with intestinal contents. The records show that every Negro who died had taken preoperative purgatives.

TABLE 3.—*Record by Hospitals*

Hospital (1929–1931)	Patients	Died	Percentage
1	1,157	45	3.88
2 (charity)	820	38	4.20
3	814	30	3.70
4	628	17	2.70
5	392	9	2.30
6 (colored)	286	42	14.00
7	159	4	2.50
8 (children)	14	1	7.00

DANGER OF PREOPERATIVE PURGATIVES

Two lessons that have been impressed on medical students and on the medical profession and the public in regard to the treatment of appendicitis have been to avoid the administration of preoperative opiates and

1. McCarrison, Robert: Faulty Food in Relation to Gastro-Intestinal Disorder, J. A. M. A. **78**: 1 (Jan. 7) 1922.

preoperative purgatives. One of the principal objects in preparing the present paper was to learn, if possible, what were the results of the violation of these fundamental rules. It was a surprise to find that only 37 patients in the series were given opiates before entering the hospital. No doubt the number was considerably larger, but numerous well written and ample case histories failed to state that opiates had been given, and many records took pains to emphasize the fact. However, in 34 of the 37 patients who received opiates complications developed due to delay in operating, and 3 died.

TABLE 4.—*Record by Age Decades* *

Ages	Patients	Died	Percentage
1 to 10	274	17	7.0
11 to 20	1,275	40	3.0
21 to 30	1,495	35	2.3
31 to 40	425	25	6.0
41 to 50	230	24	10.0
51 to 60	119	18	15.0
61 to 70	51	13	25.0
71 to 80	11	2	18.0

* One patient, aged 87, and one aged 6 months recovered. The oldest patient to die was 75 years; the youngest, 2 years.

The charts chronicled 475 patients as having received preoperative cathartics. This was only 11 per cent of the total number of patients, whereas most series show that as many as 50 per cent of patients receive such medication. Manifestly the histories were incomplete. At any rate, 75, or 15 per cent of the 475 who received purgatives, died. Seventy-five was 40 per cent of the total number of 188 deaths.

Transporting patients long distances, from 50 to 200 miles, by train, ambulance or automobile, apparently did not lessen the chance of recovery. Three hundred and eighty-eight patients were thus brought into the city and operated on for acute appendicitis. Sixteen died, a percentage of 4. In 55 cases the appendix was not removed, and only drainage instituted; 26, or 47 per cent, of these patients died. There was a record of only 1 returning later for appendectomy, which was done with a fatal result. Some form of drainage was instituted in 809 operations, 18 per cent. Only the abdominal wall was drained in one fourth of these cases

TABLE 5.—*Record by Months*

Month	Patients
January	324
February	372
March	401
April	394
May	417
June	361
July	416
August	365
September	320
October	271
November	275
December	294

TREATMENT

It is not within the scope of the paper to discuss methods of treatment. The time of the operation plays the biggest part in the result. It has been well said that it is better to have an early operation performed by a general practitioner than a late operation performed by a professor. Usually when the operation is completed, the patient's fate is sealed. Postoperative management can seldom alter the ultimate outcome, although it may add much to comfort. Orthodox treatment, operative and otherwise, seemed to prevail in the majority of these cases. Saline solutions and dextrose were administered generously by all routes. In serious cases of appendicitis the patients are not only dehydrated by vomiting and sweating, but also by the fluid that is poured into the intestinal canal. Physicians do not yet seem to appreciate the value of inhalations of carbon dioxide after operations to prevent pulmonary complications.

UNUSUAL METHODS OF TREATMENT

Two unusual methods of treatment in complicated cases were discovered. First, the method described by Crisler,[2] in which tincture of iodine is poured freely into the peritoneal cavity in the presence of diffuse peritonitis, was tried in 4 cases, with a mortality of 50 per cent. Ten ounces (295 cc.) of a 2 per cent solution of iodine was used. The other unorthodox method of treatment in serious cases, used by several members of the medical profession in Atlanta, is known as the calomel method. Half grain doses of calomel are administered every half-hour for 6 doses, beginning immediately after the patient is able to swallow. The advocates of this method claim that a case of ileus has never occurred following this treatment. A strenuous modification of the method is to leave a large rubber drainage tube close to the ligated stump of the appendix. Large doses of calomel are then given in the hope of establishing a fecal fistula, which sometimes succeeds. The justification of this method lies in the idea that patients with fecal fistulas always get well.

TABLE 6.—*Complications*

Complication	No. Cases	Per Cent	Deaths	Per Cent
Gangrene	690	16.0	88	13
Perforation	410	9.5	105	56
Abscess	197	4.3	32	16
Peritonitis*	335	7.8	110	33
Ileus	33	....	15	46
Diverticulum	7	....	..	..
Fecal fistula	7	(Enterostomy performed in 18 cases with		
Phlebitis	2	(Femoral vein)		10 deaths)
Pneumonia	12	....	6	50
Lung abscess	3	....	..	..
Lung collapse	1	....	..	..
Lung embolus	2	....	1	..
Empyema	1	....	1	..
Heart lesion	3	....	3	..
Dilated stomach	1	....	1	..
Diabetes	2	....	..	..
Pregnancy	8	....	1	..

* Peritonitis caused 60 per cent of the total deaths.

Among complications were the ones given in table 6.

All abscesses were located in the right iliac fossa, pelvis or loin. Subphrenic abscesses were absent. The draining of appendical abscesses through a stab wound in the loin is popular with surgeons in Atlanta. Peritonitis means general peritonitis, suppurative and nonsuppurative. Most cases of ileus were of the paralytic, or adynamic, type. Spinal anesthesia was helpful in relieving the condition. The majority of fecal fistulas closed spontaneously. A few were treated successfully with suction drainage. Enterostomy is to be preferred to cecostomy, although the results in both procedures are often disappointing. Enterostomy is more useful in the dynamic, or mechanical, type of obstruction. It was employed as a secondary operation in these cases.

Formerly all pulmonary complications following operations of this kind were called pneumonia. Closer scrutiny perhaps would demonstrate that some were

2. Crisler, J. A.: A Further Study in the Use of Iodine in Combating the Peritonitides, Tr. South. S. A. 28: 230, 1915

pulmonary collapse or embolism. There are two important late sequelae that could be studied only by a follow-up system. These are dynamic ileus and postoperative hernia.

ANESTHESIA

Local anesthesia was used in 77 operations, with 17 deaths, or 22 per cent. Spinal anesthesia was used 382 times, with 26 deaths, or 7.3 per cent. In the other cases general anesthesia of various forms and combinations was employed. Usually local and spinal anesthesia are selected only in poor risks, but some operators prefer spinal anesthesia as a routine measure. Only a single death occurred under spinal anesthesia that might be attributed to the anesthetic.

TABLE 7.—*Relation of Delay to Mortality* *

Patients Admitted to Hospital	Number	Deaths	Per Cent
Less than 6 hours after onset of symptoms and operated on immediately	219	0	0
Between 7 and 12 hours	578	6	1.0
Between 13 and 18 hours	204	2	1.0
Between 19 and 24 hours	826	22	2.6
Between 25 and 36 hours	178	22	1.2
Between 37 and 48 hours	595	28	5.0
Between 49 and 72 hours	335	22	6.5
More than 72 hours	578	48	8.0
		150	

* Owing to incomplete history charts, this table does not account for all patients and all deaths, but enough is shown to indicate the relation of delay in treatment to the mortality.

CONCLUSIONS

The conclusions drawn from the consideration of the results in this series of cases of acute appendicitis coincide with those of Royster,[3] Bower,[4] Gerster,[5] Miller,[6] Ochsner,[7] Foss [8] and others who have written so forcibly on the subject. A disease fraught with so many sudden, unavoidable complications is bound at times to result fatally, even under the most favorable surroundings. The fact that there were no deaths among 219 patients admitted within six hours after onset demonstrates the immense value of prompt action. Most of these patients were students and nurses under closer supervision than the average person. Even in this group, however, mortality may occur. Occasionally a violently fulminating case occurs, such as Wilkie's acute appendical obstruction, in which no amount of experience and skill may save the patient.

TABLE 8.—*Causes of Death*

Pregnancy	1
Dilated stomach	1
Empyema	1
Pulmonary embolus	1
Pneumonia	6
Heart lesion	3
No operation	5
Abscess	32
Ileus	15
Peritonitis	110
	175
Undetermined	13
	188

The two outstanding factors in mortality and morbidity are delay in operative treatment and the promiscuous administration of purgatives before operation. The fault usually lies with the patient or with his family or friends, but the attending physician or surgeon is not always blameless. The error may be due to ignorance on the part of the patient, but it also may occur with the knowledge and consent and advice of the medical attendant. The physician's mistake is not one of ignorance, but of carelessness. Efforts must be continued and enlarged in the education of the public as to the early care of abdominal pain, a campaign that has been waged so vigorously in Philadelphia. The medical profession, however, must not be guilty in this respect, and not let familiarity with the commonest of all surgical diseases induce criminal somnolence.

ABSTRACT OF DISCUSSION

DR. J. C. A. GERSTER, New York: Appendicitis mortality rates are higher in the United States and Canada than in any other civilized nation; and since 1920 there has been a definite upward trend—in 1930 about 15 per hundred thousand—double that of England and Wales. Analysis of 34,408 deaths from appendicitis among industrial policyholders of the Metropolitan Life Insurance Company shows that appendicitis ranked second only to cancer among surgical diseases. I am indebted to the statistical department for these figures. Dr. Boland said that in Atlanta appendicitis is six times as common among white persons as among Negroes, and he ascribed this to more primitive food and living conditions of Negroes. Dr. Louis T. Wright reports that appendicitis is frequent among Negroes in New York. Histories of preoperative purgation were common in both white persons and Negroes. In Philadelphia, education of the public regarding dangers of catharsis and delay in the presence of abdominal pain reduced appendicitis mortality from 16.4 in 1927 to 13.9 in 1931. I previously called attention to a small series of postoperative intestinal obstructions, caused by adhesions between the omentum and the posterior parietal peritoneum or the mesentery of the small intestine, directly traceable to failure to pull the omentum through the appendectomy wound and replace it superficially to the intestine before the peritoneum is closed. In any large series of cases with typical symptoms of acute appendicitis, the appendix will be found normal in a small percentage. However, the percentage in which an acute suppurative process is present is so overwhelmingly preponderant that in the face of typical symptoms one dares not leave the abdomen closed. A low blood count is no contraindication to operation. As Dr. Joseph A. Blake says, "if the patient shows any one of the cardinal signs of appendicitis, it is safer to operate."

DR. JOHN O. BOWER, Philadelphia: If the health department of every state and municipality in the United States would institute a yearly survey such as Dr. Boland has conducted in Atlanta, the mortality of acute appendicitis would gradually diminish. Delayed hospitalization and the administration of laxatives are responsible for 90 per cent of the deaths. These factors are controllable, as the surveys in Philadelphia demonstrate. In elaboration of Dr. Boland's point regarding mortality rate, one must face the fact that, although 1,050 articles were written on acute appendicitis from 1916 to 1930, the mortality rate has not been diminished. The writers of these articles with two or three exceptions have reported series of cases emphasizing individual mortality rate. If the gross mortality is to be decreased in the United States, the true condition in hospitals must be reported. The surveys in Philadelphia show that many years of experience do not always mean a low mortality, especially in the management of spreading peritonitis. If Dr. Boland conducts another survey, I would suggest that particular attention be given to the separation of the peritonitis group into the spreading and local types. I believe that the term "spreading" should be used instead of

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6. Miller, C. Jeff: Appendicitis Once More, Surg., Gynec. & Obst. **52**: 1038, 1931.
7. Ochsner, Alton; Gage, I. M., and Garside, E.: Intra-Abdominal Post-Operative Complications of Appendicitis, Ann. Surg. **91**: 544 (April) 1930.
8. Foss, Harold L.: Peritonitis of Appendiceal Origin, Pennsylvania M. J. **35**: 182 (Dec.) 1931.

"general" or "diffuse," because "spreading" carries with it the additional meaning of something in action. If internists and surgeons would adopt the term for cases which it describes, operation would be more cautiously considered. A diagnosis of spreading peritonitis before admission to the hospital is unusual. In fact, diagnosis of peritonitis before admission is unusual. This is a problem for the internist. The management of spreading peritonitis is still one of the most difficult problems in major surgery.

DR. SOUTHGATE LEIGH, Norfolk, Va.: In the treatment of those cases of appendicitis in which the appendix has been ruptured without limiting adhesions, resulting in the discharge of septic materials into the free peritoneal cavity, the usual method is to insert cigaret drains and "trust to luck." The general understanding is that these drains are shut off within a few hours by limiting adhesions, and in that short space of time it is manifestly impossible, regardless of the position in which the patient is placed, for the pus to gravitate to the drains. The result is multiple abscess formation, and in many cases general peritonitis and death. A careful search of the literature discloses that practically no effort has been reported as having been made by the profession to delay the formation of these adhesions long enough to drain out the pus safely. I have demonstrated to my own satisfaction, and with the recovery of the patient in otherwise probably hopeless cases, that such shutting-off adhesions can be delayed for several days, certainly long enough to permit safe and complete draining off of the septic fluids. This is done by overfilling of the blood vessels and lymphatics of the peritoneal cavity, so that the peritoneal surfaces become excretory surfaces to such an extent that they fail to adhere one to another. Such overfilling is done by getting into the bowel a large amount of fluid, beginning during or immediately after the operation, and continuing without cessation for three or more days. This overfilling of the vessels is aided also by fluid given under the skin and into the vein. By this method the discharge from the drains, instead of rapidly diminishing, steadily increases and gets thinner and thinner as time passes, requiring frequent change of outside dressings. A transverse incision is preferred: large, soft, noncompressible rubber tubes are passed down deep in the pelvis and brought out at the right end of the incision. A gauze wick is inserted into each tube and changed every twelve hours. The patient is elevated high up and placed on the right side, so that the outer ends of the tubes become the lowest point of the pelvic and abdominal cavities. Rectal fluid is given constantly and to saturation by the rectal drip, and both subcutaneous and intravenous administration of fluid is added as indicated. These cases require constant and unremitting care on the part of the surgeon, in addition to the most expert and intelligent nursing. In more than a hundred cases, with the exception of those in which the patients were admitted in a moribund condition, there has been practically no mortality.

DR. ROLAND HILL, St. Louis: Dr. Boland's statement regarding the use of purgatives is one with which all agree. Purgatives have no place in the treatment of acute appendicitis. On the other hand, with regard to opiates, I believe that an opiate is indicated if the patient is willing to have an immediate operation, and the danger of it is in causing the patient relief and causing him to delay. My experience with appendicitis has changed materially in the last few years, because, I think, of the change of methods. In the last 300 cases that I have done, including the chronic, the subacute and the acute, there have been but four deaths. There were sixty-three drainage cases with three deaths and another death from a fulminating blood infection after forty-eight hours, in what seemed to be a simple case. The plan of treatment is changed now, and the mortality that I formerly had is cut down to probably a third. In all cases, unless the patient is moribund or unless the disease is distinctly subsiding, I operate at once. The appendix is removed and the pus sucked out; if it has extended to the kidney regions it is sucked out from one or both sides and multiple drainage is instituted. Instead of being placed in the Fowler position, the patients are put to bed. The head of the bed is elevated 1 foot. The patient is turned on his abdomen with a pillow under his chest and one under his head. The position is uncomfortable but it brings the purulent products to the hollow of the abdomen, it gives a maximum of gravity drainage and, I believe, distinctly slows absorption. With this, of course, physiologic solution of sodium chloride is used, together with dextrose, and absolutely nothing is given by mouth under any conditions except a little water—no nourishment of any kind, no purgatives of any kind, no enemas of any kind. In three days' time the patient will pass gas naturally, and the recovery has been remarkable in the vast majority of cases. Generally the drains are out in forty-eight hours.

DR. HAROLD M. TRUSLER, Indianapolis: The adynamic ileus that occurs as a complication of appendicitis is of serious consequence only when it indicates a generalized spreading peritonitis. The ileus that occurs from localized peritonitis or pelvic abscess is in reality not adynamic. The intestine above the abscess or the localized area of peritonitis is vigorously contracting; there is vigorous peristalsis. By the simple process of auscultating the abdomen, borborygmi can be heard, and if on the third or fourth postoperative day borborygmi cannot be heard after suitable efforts, one may be sure that some form of spreading peritonitis is present, and the outlook is grave. In the form of ileus that generally complicates a localized peritonitis, the effect is that of a mechanical obstruction. It has been my experience that a simple enterostomy will often save the life of a patient who otherwise would die of this complication. I am relieved that no one has conducted an argument on the subject of immediate versus delayed operation in acute appendicitis; in other words, the well trained surgeon should select his procedure according to the individual case. Some are delayed with benefit, but by far the greater number are most safely managed by performance of the operation as soon as the diagnosis is made. One should never be guided entirely by one rule or the other. As Dr. Royster has indicated in his excellent book on the subject, the diagnosis of acute appendicitis is not always easy, and at times a positive differential diagnosis is impossible. I feel that many honest physicians are too conservative in the matter of advising operative procedures when acute appendicitis is suspected. Those who do advise operation in the doubtful case are often unjustly criticized. These attitudes go far to explain the high mortality in acute appendicitis.

DR. HORACE REED, Oklahoma City: It is evident that until the patient is seen earlier the mortality from acute appendicitis is not going to be lessened. The remarks that are directed to the treatment of the complications are varied and differ widely, but all can agree on one thing, that if the patient is operated on before rupture takes place, the mortality will be negligible. The public ought to know something about the first signs of acute appendicitis. I should like to see deleted from the English language a term which is too often used, which satisfies the newspaper reporter and too often lulls the physician, and that term is "acute indigestion." Acute indigestion is not always appendicitis, but acute appendicitis always begins, to the uninitiated, as acute indigestion. In our own state, efforts are being made to educate the public on the early signs of acute appendicitis. In one large organization in our state in which there are something like 4,000 employees, this information has been disseminated, and over a period of nearly three years there has not been a death from acute appendicitis.

DR. L. F. BARNEY, Kansas City, Kan.: In the treatment of peritonitis in appendicitis it has been said that enterostomy is one of the most important things. It has been my opinion of recent years that with peritonitis the principal trouble is not the fluid in the peritoneum, but the chief trouble is in the intestine, the intestinal fluids, the ileus, as has been mentioned. There are many who have given up the idea of drainage of the peritoneum, or at least they use it only temporarily. If one will observe the different methods for drainage of the peritoneum, one will find that not one of them is entirely satisfactory. Each man who gets up to discuss the drainage of the peritoneum has his own views, but it is my opinion that it makes little difference how one drains the peritoneum; more important is how one drains the intestine. Of late years I have been using a method which to me is very satisfactory. It is termed continuous gastric lavage. Dr. Leigh has emphasized giving plenty of fluids in the intestinal tract. I agree with him. In the past it has been a custom not to give any

fluids, but with the method that I employ it is just the opposite; that is, by the insertion of a nasal tube down into the intestine, and then instead of limiting the fluids, increasing them, giving not quarts but gallons. I have records of patients who have drunk as much as five gallons in twenty-four hours; yes, some of them even six gallons. At first none of that is absorbed. The tube is down in the intestinal tract and it drains out; at first it drains out the fluid mixed with intestinal contents and the first twenty-four hours there is more drainage than the intake by mouth. The second twenty-four hours it will be about equal, and after the second twenty-four hours there begins to be some absorption in the intestinal tract. There is one thing to which I want to call attention, and that is, be sure to give fluids by other routes, too, preferably by venoclysis. One should make sure that these patients are given enough fluids so they are not dehydrated. If they receive plenty of fluid and if the intestinal tract is washed, there will be little trouble. Since I have been using this method my mortality in so-called general peritonitis (I like the term "acute generalizing peritonitis" better) has dropped from 90 per cent to almost nil.

CELIAC DISEASE

ITS SPECIFIC TREATMENT AND CURE WITHOUT NUTRITIONAL RELAPSE

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It is not generally realized that celiac disease occurs at all ages, although Gee,[1] who first described it, called attention to this fact. It usually occurs before the fifth year, beginning most frequently in the latter half of the first year. The onset is usually so gradual that the date is difficult to set; occasionally it is abrupt. The course is chronic, and there is a marked tendency to relapse. The symptoms are usually characteristic. There is a marked hypotonia. The face is edematous, distressed, pale and emaciated, but is less emaciated than the extremities, which the patient may be unable or disinclined to move. There is great irritability, and usually complete anorexia. The abdomen is very large, protuberant and soft, except when distended by gas. The stools are frequent, large, pale and foul-smelling, rarely watery, and appear to be greater in bulk than can be accounted for by the intake. There is a marked retardation in growth.

Many cases occur in which there is no enlargement of the abdomen, the only symptoms being recurrent attacks of diarrhea, irritability and failure to grow.

PATHOGENESIS

The pathogenesis of celiac disease is still obscure. It has occurred after all kinds of feeding, but is especially likely to follow a heavy carbohydrate diet. There is a constitutional tendency to the disease[2] (table 1). It occurs not infrequently in several members of a family; cases have been reported in twins, in brothers or sisters, in cousins and even among more distant relatives.

Sauer[3] expressed the belief that transmission of the disease from one child to another is possible, and he reported three instances in which this apparently occurred; in each instance the children were related. Against this belief may be cited the infrequency of more than one case of celiac disease in a family at one time, except in the instance of identical twins, and the frequency of its occurrence in various members of a family without contact.

There exists a characteristic intestinal flora, Bacillus bifidus of Tissier,[4] with a persistence of the breast milk flora. Herter believed that B. infantilis was also regularly present, but this has not been confirmed.

At the height of the disease B. coli are vastly diminished in numbers,[5] but as recovery sets in there is a relative decrease in the number of gram-positive bacteria in the feces and a corresponding increase in the gram-negative forms, corresponding to B. coli and B. aerogenes.[4a]

TABLE 1.—*Familial Incidence*

Fanconi	Sisters	2
	Identical twins	2
	Parents, brothers or sisters who suffered from chronic intestinal disturbance	6
Feer	Sisters	2
Halbutzel and Weber	Twins	2
Hess	Sisters	
Lehndorff and Mautner	Cousins	
	Nephews	
Sauer	Cousins	4
	Twins	2
Haas	Sisters (2 pair)	4
	Cousins (5 pair)	10
	Second cousins	4
	Twins, identical (1 pair)	2
	Twins (1 pair)	2
	Uncle	1
Made up as follows:		
Shirley B.	Had an older sister who died from the disease two years before the present patient was born	
Rita G.	Had a cousin five years younger than she	
Mortimer R.	Had a cousin, Robert S.; had a second cousin, Philip R.; had an uncle, Mr. P.	
L. twins (identical)	Both affected	
Vivian K.	Had a cousin, Martin B., two and a half years younger	
Caroline B.	Had a sister three years older	
Eleanore S.	Had a cousin, Eleanore S., five years older	
Marvin L.	Had a cousin, Mary H.	
Sally L.	Had two second cousins, Stuart B. and Ralph B. (brothers)	
Barbara H.	One of twins; the other died before coming under treatment	

PATHOLOGY

There is no pathologic structure in celiac disease. The findings reported by some authors are probably secondary, the result of a complicating avitaminosis.[6] The various digestive organs have been found to be normal; their digestive ferments are active. Although water, fat, carbohydrate, proteins and all salts are absorbed from the intestines in only small amounts,[7] the weight of evidence seems to show the fault to be one of absorption and utilization of carbohydrates, and to a lesser extent of fats. Whether this fault is due to changes in the physicochemical constitution of the intestinal contents, i. e., bacteria, etc.,[8] to disease of the intestinal walls[9] or to some other factor, such as paralysis of the sympathetic,[10] is unknown. In normal

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3. Sauer L. W.: Celiac Disease (Chronic Intestinal Indigestion), Am. J. Dis. Child. **34**: 934 (Dec.) 1927.
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children, after the ingestion of sugar by mouth, there is a rise in the blood sugar.[11] In celiac disease this rise does not occur, resulting in a flat curve.[12] This flat blood sugar curve has been found by a number of observers,[13] and at least one [8] believes it to be pathognomonic of active celiac disease, and, judged by the blood sugar,[2] there appears to be an interference with the absorption of the monosaccharides.

Poor absorption of fat is an invariable symptom of celiac disease; a much greater amount of fat is thrown out than is ingested, sometimes amounting to double the quantity. This must be explained by the throwing off of large quantities of fat containing epithelium from the intestinal wall.[2]

Fig. 1.—S. B., aged 22 months, weighed 13 pounds and 8 ounces (6.1 Kg.) and the height was 71 cm. at the beginning of treatment.

The carbohydrate intolerance is not always complete; some patients recover even though carbohydrate is included in the diet; however, these cases cannot be differentiated. It is this variation in cases which probably accounts for the reports of successful treatment in some instances by methods that permit the use of those carbohydrates shown by almost universal experience to be harmful.

The diet advocated in this paper has been developed gradually through the years.

Gee understood where the fault lay, but had no satisfactory substitutes for the offending foods. Herter experienced the same difficulties, but was able to add gelatin to the list of foods useful in this disease. It was not until Finkelstein [14] devised a method for removing most of the sugar from the milk by the preparation of protein milk that further progress was possible. Howland [15] recognized its value for celiac disease, and advocated a three-phased diet consisting of a first phase (lasting a few weeks), during which only protein milk is used; a second phase (lasting months or years), in which other protein foods are added, and a third phase, in which carbohydrates are added.

Sauer later devised an exceedingly simple and effective methods of applying Howland's scheme of diet, by using powdered protein milk. Although this high protein diet gave satisfactory results, it was a one-sided diet which in some instances required years of abstention from carbohydrates and therefore was not always easily carried out. This fault was removed when I found that ripe bananas were well tolerated in celiac disease [16] and could be used in any required amount. Vegetables and other fruits were included in the diet that I advocated,[16] and Fanconi [2] has since stressed and amply demonstrated their value.

11. Tisdall, F. F.; Drake, T. G. H., and Brown, Alan: The Carbohydrate Metabolism of the Normal Infant, Am. J. Dis. Child. **30**: 675 (Nov.) 1925.

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PROGNOSIS

Although patients occasionally recovered completely without any especial assistance, the prognosis was distinctly poor until Howland urged the importance of excluding all carbohydrates from the diet and advised the use of protein milk as the basis of a high protein feeding.

With my finding that the carbohydrate of ripe bananas is tolerated perfectly in this disease, the prognosis was still further improved, so that now, in cases in which the diet can be controlled for a sufficient period, recovery ensues in every instance without nutritional relapse. There have been no reports of patients treated by other methods in whom frequent relapses have not occurred.

TREATMENT

The successful treatment of celiac disease becomes a simple matter if it is borne in mind that carbohydrates—sugar, starches, flour, grains or potatoes—in any of the forms in which they are ordinarily used, such as bread, crackers, zwieback, cereals, puddings, pastries, sweets or dishes that contain them, must be rigorously excluded from the diet; that milk must not be used, and that fats, especially cod liver oil, must be excluded from the diet at the beginning of treatment. However, certain carbohydrates and fats and all proteins can be used in an amount necessary for maintenance and rapid growth.

In the diet for the children with celiac disease studied, each quart of protein milk [17] contained 4 ounces (118.4 cc.) of 20 per cent cream, and as from 1 to 2 quarts (946 to 1,892 cc.) of protein milk was used, there was an intake of from 4 to 8 ounces (118.4 to 236 cc.) of 20 per cent cream daily. This would seem to indicate that the fats are apparently of secondary importance. In only one case was it necessary to eliminate cream from the formula, but this was immediately replaced by an equal value of butter, which was well tolerated.

Fig. 2.—S. B., at the age of 5¼ years. She weighed 48 pounds and 8 ounces (22 Kg.) and was 117 cm. tall. She was cured, but the abdomen was still enlarged.

Protein milk prepared by any other method or any of the commercial preparations may be used. In older children it may take two or three days before the protein milk is accepted; if it is then refused, milk prepared with calcium caseinate, although not quite so satisfactory, may be used, and this is invariably

17. The protein milk was prepared in the following way: One quart each of commercial buttermilk and water is poured into a pot. This mixture is heated to 145 F. and then pushed to the back of the stove or kept over a low flame to maintain this temperature for an hour (an ordinary dairy thermometer is required). One quart and 4 ounces (36 ounces [1,064.5 cc.] of the fluid, which is whey, is removed and discarded. The remaining 28 ounces (828 cc.) of whey and curds is then mashed through a fine sieve. To these 28 ounces of curd is added 4 ounces (118.4 cc.) of 20 per cent cream (or 4 ounces from the top of a bottle of milk), producing 32 ounces (946 cc.) of protein milk.

taken. To each quart of protein milk is added 3 ounces (85 Gm.) of banana powder. In addition to the protein milk containing the banana powder, ripe bananas are offered at once and may be given in any quantity.[18]

After the initial anorexia is overcome, the appetite usually becomes voracious, and it is necessary to permit the patient to eat at frequent intervals, day and night.

TABLE 2.—*Specimen Diet*

Diet of Sally L. First 8 Weeks of Treatment

	October, 1930				November, 1930			
Kind of Food	7*	14	21	28	4	11	18	25
Protein milk, ounces	4	19	29	48	50	40	32	32
Pot cheese, ounces	4	8	7	8	5	8	8	6
Meats, ounces	2	2	3	3	3	3	3	3
Banana powder, ounces	1⅓	1⅓	1⅓	2⅓	4	2⅔	2⅔	2⅔
Egg whites	2	2	2	2	2	2	2	2
Bananas	4	5	9	12	19	17	12	9
Orange	2	2	..	1	..	..	1	1
Apple	½	½	..	..	..	1	..	..
Carrots, teaspoonfuls	1	1	1	2	1	1	2	1
Peas, teaspoonfuls	2	3	4	4	4	3	4	3
String beans, teaspoonfuls	2	1	1	1	4	2	2	2
Spinach, teaspoonfuls	2	1	..	3	4	1	1	1
Celery, portion	1	1	1	1	1	1	1	1
Lettuce, portion	1	1	1	1	1	1	1	1
Oscodal, tablets	3	3	6	6	6	6	6	6
Total calories	1,025	1,433	1,724	2,412	3,037	2,726	2,248	1,930
Calories per pound	(57)	(75)	(82)	(105)	(126)	(113)	(90)	(77)

* Beginning of treatment.

This period, however, lasts only from four to eight weeks, when the body cells, after their long deprivation, apparently become appeased, the voracious appetite diminishes, and the patient can be put on the customary three or four hour schedule. During this period there have been added to the diet beef juice or meat for the older children, cottage cheese, white of egg, orange juice or other fruits and vegetables, which must be introduced carefully, one at a time, potatoes excepted (table 2).

Owing to the large food intake, a full dose of castor oil should be given once a week, the interval being gradually increased to once a month. Vitamin D is given early, but not in the form of cod liver oil, which usually causes trouble. For severe secondary anemia, iron should be given. The diet, then, at the end of from four to eight weeks, consists of:

Protein milk, 32-64 ounces (946-1,892 cc.)
Banana powder, 3- 6 ounces (85-170 Gm.)
Bananas, 1- 6, or more
Cottage cheese, ad lib.
Beef juice
Meat
Fruit juices or fruits
Vegetables
Cod liver oil concentrate,[19] or viosterol
Iron

This forms a complete maximum diet, and it will be found that the quantities usually taken furnish between 80 and 100 calories per pound. The stools with this diet are fairly large, formed and from 2 to 4 daily. Should a relapse occur during the use of this diet, in the absence of an acute infection, it is certain that some carbohydrate is being used other than that which is allowed. An unbelievably small amount of improper carbohydrate, such as a bit of bread crust daily, may bring about a relapse; this fact has also been reported by others.[2]

The diet must be continued for a long time, preferably a year. However, after six months an attempt may be made to introduce some form of forbidden carbohydrate, such as in bread or cereal; one is selected, and a small amount is allowed daily, with no other change for at least three months; then if no relapse has occurred another addition may be made, i. e., milk, 16 ounces (473 cc.) daily, for another three month period, and so on until a normal diet is used.

If, however, the time has not arrived when these foods can be borne, anorexia, frequent loose stools and retardation of growth ensue and if the offending substances are not at once omitted from the diet, the celiac state may return in full force. It should never be forgotten that there is a low tolerance for carbohydrates in these cases, and therefore sweets and sugars should always be used sparingly.

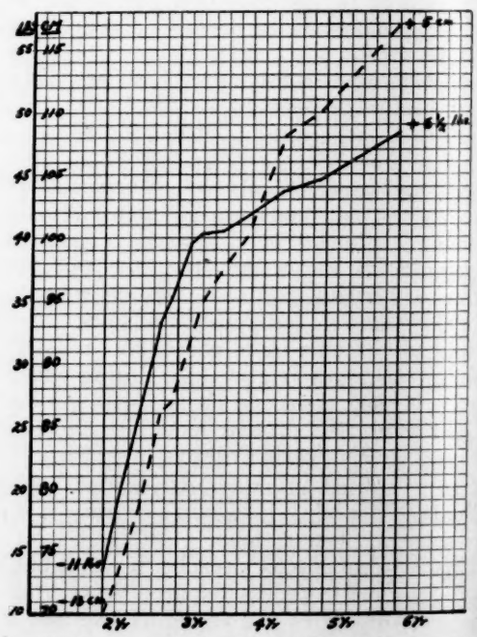

Fig. 3.—Shirley, B., aged 22 months, weighed 13½ pounds and was 71 cm. tall. The abdomen was large; edema and paresis of the lower extremities were present. The hemoglobin was 35 per cent. In twelve months she gained 24 pounds (10.9 Kg.) and grew 19 cm. An older sister died of celiac disease two years before the patient was born. The flattening of the curve at 3 years was the result of pertussis and a trial of whole milk. She is now on a full diet.

COMMENT

Increase in length is of much greater importance than gain in weight in celiac disease, and no treatment that fails to produce normal growth in length can be considered satisfactory.

An avitaminosis is present in all long-standing cases.[6] Symptoms of beriberi[20] are more frequent than those of scurvy, and the photophobia that occasionally exists is probably a xerophthalmia.

18. The relative values of ripe bananas and ripe banana powder are as follows:

Ripe Bananas	Gm. or Cc.	*Ripe Banana Powder*	Gm. or Cc.
Water	75.30	Moisture	2.50
Ash	0.85	Ash	3.18
Fat	0.60	Fat	1.50
Protein	1.30	Protein	4.86
Cellulose	0.81	Crude fiber, cellulose	3.25
Carbohydrate	22.00	Nitrogen-free extract	84.71
(Sugars 19.85)		As:	
Invert sugar	7.00	Invert sugar	32.65
Sucrose	11.00	Sucrose	33.18
Calories per ounce	30	Dextrin	9.60
		Starch	7.80
		Gums and undetermined ingredient	1.48
			84.71
		Calories per ounce	110

19. In these cases oscodal was usually used, as it was the first cod liver oil substitute available, but occasionally the sugar coating of the tablet proved harmful.

20. Haas, S. V.: Beriberi in Late Infancy: Result of Celiac Disease, Arch. Pediat. 46: 467-478 (Aug.) 1929.

In all cases of celiac disease, ripe bananas are tolerated perfectly, and ripe banana powder has simplified their use. The terms ripe banana and ripe banana powder are used interchangeably as they are identical qualitatively, although they vary in some degree quantitatively. Among the properties peculiar to the banana which probably account for their action in celiac disease is the power to hydrolize starch and to convert cane sugar into invert sugar through the action of an enzyme. Ripe banana powder changes the intestinal flora of normal infants from a gram-negative to a gram-positive aciduric type, having the same effect as acidophilus milk. Bananas contain all vitamins in adequate amount, excepting D.[21]

In celiac disease, when fructose is used in equal amounts with dextrose, a normal blood sugar curve results, whereas other sugars produce a flat blood sugar curve, which may explain the good results of banana feeding in this disease.[12]

Bananas do not produce intestinal fermentation, and unlike other fruits or sugars they may be taken in any amount without producing loose stools. In marked cases of celiac disease no other pure carbohydrate can be used without eventually producing symptoms of carbohydrate intolerance. When bananas are fed in large amounts to patients with celiac disease, the stools give no iodine reaction for starch.

When the mixed fecal flora from a case of infantilism are inoculated into sugar-bouillon fermentation tubes (lactose, dextrose, saccharose), the bifid organisms grow better in dextrose and lactose than they do in saccharose.[4a]

A decrease in urinary acidity is a definite effect of the intake of banana, and may also help to explain the value of banana in chronic intestinal indigestion.[22]

The present status of eight patients whose cases were reported in 1924 [16] is as follows: Five are above average height, two are average height, and one not under observation is reported to be normal. The weights are much above the average for all except two, who are below the average. All are taking what is practically a normal diet.

This study is based on experience with seventy-five cases; the patients seen in consultation and in institutional practice and the cases previously reported have been omitted from this report (table 3).

TABLE 3.—*Cases*

Name	Beginning of Treatment: Age	Weight, Lbs.	Height, Cm.	When Last Seen: Age	Weight, Lbs.	Height, Cm.
Sally L.	28 mo.	— 9	— 6	3 yr. 9 mo.	+ 5	+ 3
Shirley B.	22 mo.	—10	— 9	5 yr. 10 mo.	+ 5	+ 3
Robert O'K.	24 mo.	— 6	— 4	4 yr. 8 mo.	+ 4	+ 5
Paul K.	3 yr.	Normal	+ 3	5 yr. 7 mo.	+ 7	+10
Lawrence L.	3 yr. 3 mo.	— 9	— 7	5 yr. 6 mo.	+ 8	+ 2
Helene B.	2 yr.	— 3	— 6	5 yr. 4 mo.	+15	+ 8
Anita B.	5 yr. 8 mo.	— 1	+ 7	6 yr. 3 mo.	+16	+20
Edward R.	11½ mo.	— 4	— 2	25½ mo.	+ 4	+ 2
Harold H.	11 mo.	— 4	Normal	5 yr.	+ 7	+12
Kenneth F.	2 yr. 4 mo.	— 6	— 6	4 yr. 11 mo.	+ 6	+ 5
Pearl G.	9 yr. 6 mo.	—10	— 7	10 yr. 10 mo.	Normal	+ 4
Vivian K.	3 mo.	— 3	— 4	2 yr.	+ 3	+ 3
Ruth S.	5 yr. 9 mo.	—13	—19	11 yr.	+14	+10
Martin L. (twin)	10 mo.	— 5	— 4	3 yr. 2 mo.	+ 1	+10
Marvin L.	11 mo.	— 1	— 3	2 yr. 5 mo.	+ 3	+ 2
Everett S.	1 yr.	— 2	+ 2	2 yr. 6 mo.	+ 3	+ 6
Werner W.	3 mo.	— 3	— 2	22½ mo.	+ 1	+ 3
Richard C.	2 yr. 6 mo.	— 1	+ 3	4 yr.	+ 1	+ 7
Alan G.	2 yr. 6 mo.	+ 4	+ 4	3 yr. 2 mo.	+ 5	+ 5
Pearl J.	4 mo.	— 1	Normal	3 yr. 6 mo.	+ 5	+ 5
Margot K.	9 mo.	Normal	— 2	5 yr. 3 mo.	+ 4	+ 2
Helene L.	11½ mo.	— 4	— 2	6 yr. 8 mo.	+12	+ 8
Gloria H.	2 yr. 7 mo.	— 6	— 3	6 yr.	+ 1	+ 2
Helene M.	4½ mo.	— 1	— 5	15 mo.	+ 1	+ 3
Lila S.	8½ mo.	Normal	Normal	2 yr. 8 mo.	+ 1	+ 4
Rose S.	3 yr. 6 mo.	Normal	Normal	5 yr. 6 mo.	+ 9	Normal
Howard S.	10¾ mo.	+ 2	Normal	13 mo.	+ 2	+ 2
Barbara D.	3 yr. 6 mo.	Normal	Normal	3 yr. 7 mo.	+ 1	+ 3
Elaine F.	6 wk.	— 1	+ 1	5 yr.	+19	+12
Robert S.	2 yr.	Normal	— 4	6 yr. 7 mo.	+ 1	+ 1
Philip R.	6 mo.	— 1	— 1	10 mo.	+ 1	+ 1
Elaine K.	17 mo.	— 5	— 4	6 yr. 4 mo.	Normal	+11
George H.	6 mo.	Normal	Normal	9¾ mo.	Normal	+ 3
Barbara H.	14 wk.	— 5	— 7	2 yr. 4 mo.	Normal	+ 3
Patricia G.	6 mo.	— 1	+ 3	7½ mo.	Normal	+ 6
Norman K.	17 mo.	— 2	Normal	3 yr. 6 mo.	Normal	+ 3
Alan H.	10 mo.	— 2	— 3	3 yr. 2 mo.	Normal	+ 4
Roseann F.	10½ mo.	— 6	— 8	3 yr.	+½	Normal
Howard E.	3 yr.	— 4	Normal	6 yr.	Normal	Normal
Joyce O.	6¾ mo.	— 1	— 1	2 yr. 7 mo.	— 2	+ 4
Margot G.	7 mo.	— 4	+ 4	2 yr. 6 mo.	— 3	+ 4
Eleanore S.	4 yr. 8 mo.	Normal	— 3	5 yr. 6 mo.	+ 1	— 2
Anita R.*	4½ mo.	— 2	— 1	5 yr.	— 4	— 1
Jerome L. (twin)	10 mo.	— 4	— 2	2 yr. 8 mo.	— 2	+ 8
Irma F. †	20 mo.	— 3	?	9 yr. 6 mo.	— 6	— 2
Nathan S. *	10 mo.	— 7	?	9 yr. 2 mo.	—18	— 9
Stanley F.	7 mo.	Normal	Normal	2 yr. 5 mo.	— 1	Normal
Martin L.	14 mo.	— 8	— 4	17 mo.	— 1	Normal
Arlene H.	15 mo.	— 4	— 2	5 yr.	— 1	Normal
Samuel J. §	28 mo.	— 8	— 8	5 yr. 3 mo.	— 6	— 3
Winifred P.	9 mo.	— 2	— 2	16½ mo.	— 2	— 1
Leo K. #	3 yr. 11 mo.	—14	—18	6 yr. 5 mo.	— 9	—10
Edward G. ¶	16½ mo.	— 8	Normal			

* Neglected diet.
† Mental retardation; chronic otorrhea.
§ Interrupted diet.
# Boarded out.
¶ Hospitalized; gained 1½ pounds first week; influenza infection; bronchopneumonia; died 13 days after coming under treatment.

SUMMARY

There are a constitutional tendency to the disease and a characteristic intestinal flora.

There appear to be a faulty absorption and utilization of carbohydrates and fats. The fats are of secondary importance, for if strict attention is paid to the carbohydrate intake, tolerance for fats follows.

A flat blood sugar curve is perhaps pathognomonic of active celiac disease.

Fig. 4.—R. B. was an institutional child (not included in the list of cases). The illustrations show the rapidity of change in this disease on a celiac diet. The picture on the left shows the child at the age of 7 years and 7 months; that on the right, at the age of 7 years and 10 months.

The successful treatment of celiac disease requires a high protein diet, of which the basis is protein milk, to which is added carbohydrate in the form of ripe banana powder and ripe banana; other fruits and some vegetables are tolerated to a degree. No nutritional relapse occurs with this diet.

21. Eddy, W. H., and Kellogg, M.: The Place of the Banana in the Diet, Am. J. Pub. Health **17**: 27-35 (Jan.) 1927.

22. Brown, A., and Courtney, A. M.: The Effect on Digestion and Assimilation of Including Bananas in the Mixed Diets of Some Children Over 5 Years of Age, Canad. M. A. J. **21**: 37 (July) 1929.

A relapse not due to an acute infection is always due to the introduction of some carbohydrate other than that of banana, or rarely some untolerated fat.

The banana contains all vitamins except D, hydrolyzes starch, transforms the intestinal flora and produces starch-free alkaline stools.

Vitamin D must be used as the concentrate, or viosterol, and not as cod liver oil, and for anemia some form of iron must be given.

The prognosis in cases of celiac disease under this treatment is excellent; the patients attain full stature and are capable of using a normal diet.

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ABSTRACT OF DISCUSSION

DR. JOHN SIGNORELLI, New Orleans: Celiac disease is not seen in New Orleans as often as it is reported elsewhere. We do not see the number of cases in the advanced stage that we read about. From a clinical standpoint this disease is first seen by us at various stages of development, and is not diagnosed as celiac disease but rather as a chronic intestinal indigestion, which in the latter stages might be diagnosed as celiac disease. My experience in the treatment of this condition coincides with that of every one else. In young children I follow the method that calls for a strict diet, either protein milk or protein products, to which carbohydrates are added carefully after improvement. The only carbohydrate that gives satisfactory results is that of ripe banana. I have never given such large quantities of banana as Dr. Haas. In older children I have had satisfactory results by giving other carbohydrates, as cauliflower, string beans and squash. The tone of the musculature is increased by the routine use of hydrotherapy, which tends to build up the patient's resistance. Iron is useful and satisfactory and I utilize the form of iron and ammonium citrate. I feel convinced, however, that the most satisfactory drug is nux vomica. One should give it in moderate doses at the beginning, increasing steadily but gradually until what might be called the point of physiologic action is reached. This drug maintains the appetite and overcomes constipation, besides improving the general condition. Another adjunct to the treatment in these cases is the use of the ultraviolet ray, since it is difficult to introduce a sufficient amount of vitamin D, because, as Dr. Haas has pointed out, all foods that contain this element are distinctly contraindicated in these cases. Viosterol also can be given with good results. For constipation, in young children, I have had satisfactory results by giving, at the start, a combination of sodium phosphate and ammonium chloride. This is continued until the number of stools maintains elimination but is not sufficient to deplete the general system. At this point it is discontinued and nux vomica is introduced.

DR. JOHN L. MORSE, Boston: The definition in the dictionary of "celiac" is "pertaining to the abdomen or the cavity of the abdomen." I don't think there is any such disease as celiac disease. There is a symptom complex to which this name has been applied. This symptom complex may be due to a variety of causes. It is simply a peculiar type of disturbance of digestion. In the past, when this name was first used, the trouble was mostly with the fats; now it is mostly with the starches. I agree with Dr. Haas that cases are seen in which the abdomen is not large. These are the early cases. There must be all stages from the normal child to the well developed celiac disease, so called, only there is failure to recognize the early stages. Dr. Haas says that there is a characteristic intestinal flora. I don't think that this is true. The work of Brown and his collaborators at Toronto shows definitely that there isn't a characteristic intestinal flora. I think that if one will go back to Kendall's work one will find the explanation, namely, that the bacteria in the intestine vary with the food that is put into it. In those cases in which there is an intolerance for starch one finds iodophilic bacteria, and the condition persists until they are gone. Dr. Haas says there is a flattening of the blood sugar curve. Svensgaard said that first. Jensen a few years later found the same flattening in all children with disturbances of nutrition. Lehndorff and Mautner also found that there was no characteristic curve. I agree that the diet should be high in protein and contain a minimum amount of fat and no starch. I do not agree in believing that there is anything especially useful in protein milk. I think that it simply provides a large amount of protein in an easily digestible form. Any protein that answers these specifications will do as well. I agree with the author to a certain extent that ripe bananas and ripe banana powder are well tolerated in this symptom complex. I think everybody would have to agree with that, but I don't think that his arguments as to why they agree are very satisfactory. There is a certain amount of evidence to show that the curve of the absorption of levulose is more nearly normal than the curve for the absorption of dextrose. On that basis, perhaps, one can say that the levulose in bananas would be of use. Can some other sugar be substituted for levulose? Nelson substituted dextrose in increasing amounts for bananas. She gave as much as 200 Gm. of dextrose daily between meals. Diarrhea did not develop and the weight gain was accelerated. The number and the bulk of the stools were decreased.

DR. CHARLES G. KERLEY, New York: A patient with celiac disease represents an infant whose gastro-intestinal function is held temporarily in abeyance with the exception of a limited capacity for animal protein and certain carbohydrates. With regard to the management, all agree that fresh cow's milk is to be omitted. A dried milk product, fat free, or one of the dried protein milks furnishes the best substitute. In addition to this, banana powder or overripe banana supplies the dietetic fundamentals. We are indebted to Dr. Haas for suggesting the use of banana and banana products in these cases. My cases of celiac disease are on the increase, owing, I believe, to the prevailing habit of advanced feeding with vegetables, meats and fruits to those of very tender age. The majority of my patients come from well-to-do families; the patient is the overfed only child. In accepting the celiac patient I invariably insist that the family discontinue weighing the child and advise that, while a favorable outlook is probable, the convalescence will be tedious.

DR. SIDNEY V. HAAS, New York: Dr. Signorelli brought up the question of drugs. I do not think it is really necessary to use any drug excepting iron, the form of which is unimportant. Gastro-intestinal medication or laxatives are not required. The only reason for using castor oil at intervals is the extremely large amount of food taken by these children. I think Dr. Morse is right in saying there is no such thing as celiac disease; but since there is no better term for the condition in the present state of knowledge, it will be necessary to continue to speak of it as celiac disease. He is wrong, however, when he says there is no characteristic intestinal flora and that Brown and his co-workers in Toronto disproved it. As a matter of fact, Herter first described the presence of Bacillus bifidus in these cases, and Brown, Courtney, Davis and MacLachlan were able to substantiate his observations. The flat blood sugar curve was first reported by McLean and Sullivan; since then it has been reported by Svensgaard, several English authors and four or five others. The flat blood sugar curve should be looked for; whether it will stand the test of time remains to be seen. Protein milk is of course not a specific; calcium caseinate milk is a satisfactory form of milk and replaces it among older children who refuse the former. So far as the value of the banana sugar is concerned, it is found that the sugar in the banana powder, which is four times the strength of the banana, is 32 per cent invert sugar, about 33 per cent saccharose, about 9 per cent dextrin and about 7 per cent starch. So most of it is sugar and only a little of it is starch. The work of Nelson has always puzzled me; her published data are inadequate. She used a solution of dextrose at frequent intervals between meals. Apparently her results were satisfactory; but all I can say is that, in practice, dextrose as ordinarily used produces a relapse with great regularity. Dr. Kerley's experience of finding it necessary to tell patients not to expect a gain in weight in the beginning I think can now be changed; an immediate gain in weight may be expected. The celiac diet as outlined can be used at once and freely, and it is easily tolerated. Years ago when I first began to use this method I was fearful and moved slowly and only gradually increased the food; but not now, with the result that gain occurs from the beginning of treatment.

SEVERE BRONCHIAL ASTHMA APPARENTLY DUE TO FUNGUS SPORES FOUND IN MAPLE BARK

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Within the past few years it has been definitely demonstrated that asthmatic conditions may be caused not only by pollens, horse hair, dander, etc., but also by any particular protein substances that may be inhaled and undergo parenteral absorption. Not the least important of these foreign proteins are those due to the spores of fungi. While it has long been recognized that fungi may cause pathologic conditions in the lungs, still the literature is relatively meager as regards the part played by their spores alone.

Recently Castellani, Stoval, Reich and Fox have stressed the clinical importance of mycology as applied to clinical medicine, but the allergic aspect of the subject has not been especially emphasized by these men.

While asthma itself as caused from the inhalation of animal proteins (horse asthma, pollen asthma, hay fever) is an old subject, the allergic aspect is of relatively recent origin. Especially is this true of the allergic properties of the various dusts. Cooke,[1] in 1922, showed that 109 of 327 asthmatic patients reacted positively to house dust. He found that the irritating properties were destroyed by heat. McLaughlin,[2] in 1924, found that 126 of 1,186 reacted to dust alone, the cause of which he attributed to cat hair, dander, orris, glue, etc. Storm van Leeuwen,[3] in 1925, described experimental asthma in guinea-pigs due to fungi. Figley and Elrod,[4] Ratner and Gruehl,[5] and others have described an asthma caused by the inhalation of castor bean dust. Markin[6] has described a sensitization caused by a protein found in boxwood.

It was Cadham[7] of the University of Manitoba, in 1924, however, who was the first to describe a definite spore asthma in human beings. He reported the cases of three harvest hands working in rust-infected wheat fields who were sensitized by the spores of wheat rust (Puccinia graminis). He was able to produce paroxysms of asthma in these patients by causing them to inhale the spores. One of his patients who became sensitized in 1916 served overseas, and on his return immediately became reinfected in working in the rust-infested fields. Hansen,[8] in 1928, described a series of cases in which asthma could be incited by spores of yeast and mold cultures grown from the surroundings of the patients. He also obtained reactions from extracts of fungus spores. Hopkins, Benham and Kesten,[9] in 1930, described a case of asthma due to Alternaria; Bernton,[10] in 1930, 1 due to Aspergillus fumigatus, and Flood,[11] recently, 1 due to Mucor plumbus.

This brief review seems to show that the spores of fungi are not different from other proteins in producing sensitization.

In the past year our interest has been attracted to this field because we have had occasion to examine a comparatively large group of men presenting asthmatic symptoms in whom we think that we have quite definitely established a fungus spore as the etiologic factor, acting apparently as a sensitizing antigen rather than as a parasitic infection. Between June and October, 1931, 10 employees of a railway tie plant presented themselves for examination. The histories of all these men were similar. Owing to economic conditions, the tie plant did not operate during the winter months of 1930 and 1931. Operation was resumed March 2, 1931. These men reported that they were in good physical condition on resuming their work in the spring of 1931, and in none of them was a history offered of ever having had previous attacks of asthma. These patients began to have pulmonary symptoms at various intervals between April and August, 1931. A large number dated the onset of their symptoms between May 1 and June 15. There were only 2 or 3 who dated their onset at a later date and none after August 21. The onset was fairly acute, beginning with cough and expectoration. This was followed in a day or so by shortness of breath, which in all of our cases was the predominating symptom. The cough and shortness of breath grew progressively worse as the men tried to continue at their work. In a large percentage of the cases there was a history of night sweats and substernal pain. A rise in temperature was reported by some at the onset, but no fever was found in any of this group at the time they presented themselves for examination. Weight losses were quite general and ran as high as 24 pounds (10.9 Kg.) in a month. The patients we were fortunate enough to see in the acute stage presented typical asthmatic symptoms of varying degrees.

They presented definite roentgen findings, proportionate to the degree of dyspnea present. In the severest cases there was a mottling throughout the lower half of the lungs, and in every one there was an increase in the hilus, basal and trunk shadows. There was a definite increase in the peribronchial markings throughout both lungs with the exception of the apexes. With only one or two exceptions there was practically no involvement above the second rib. The mottled basal lesions were similar in many respects to those seen in pneumonoconiosis. The parenchymatous lesion is of a soft, partially diffuse, irregular density, from 3 to 5 mm. in diameter, increasing in size and density toward the hilus. The lesion is quite faint and lacks the discrete border ordinarily seen in nodular lesions. The lesions are suggestive of small, localized, bronchopneumonic infiltrations.

Of the 10 patients seen in this group, 8 were bark peelers and the remaining 2 shoveled away the bark as it was taken from the ties. At this time there were probably 200 men employed in the various operations

Read before the Section on Practice of Medicine at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

1. Cooke, R. A.: J. Immunol. **7**: 147 (March) 1922.
2. McLaughlin, J. S.: Skin Tests in Patients with Asthma, J. A. M. A. **89**: 863 (Sept. 10) 1927.
3. Storm van Leeuwen, W.: Allergic Diseases, Philadelphia, J. B. Lippincott Company, 1925, p. 58.
4. Figley, K. D., and Elrod, R. H.: Endemic Asthma Due to Castor Bean Dust, J. A. M. A. **90**: 79 (Jan. 14) 1928.
5. Ratner, B., and Gruehl, H. L.: Am. J. Hyg. **10**: 236 (July) 1929.
6. Markin, L. E.: J. Allergy **1**: 346 (May) 1930.
7. Cadham, F. T.: Asthma Due to Grain Dusts, J. A. M. A. **83**: 27 (July 5) 1924.
8. Hansen, Karl: Verhandl. d. deutsch. Gesellsch. f. inn. Med. **40**: 204, 1928.
9. Hopkins, J. G.; Benham, R. W., and Kesten, B. M.: Asthma Due to a Fungus—Alternaria, J. A. M. A. **94**: 6 (Jan. 4) 1930.
10. Bernton, H. S.: Asthma Due to a Mold—Aspergillus Fumigatus, J. A. M. A. **95**: 189 (July 19) 1930.
11. Flood, C. A.: Observations on Sensitivity to Dust Fungi in Patients with Asthma, J. A. M. A. **96**: 2094 (June 20) 1931.

in this tie-treating plant, but we have no record of any case of asthma occurring in men other than those whose work brought them into direct contact with the bark dust.

Naturally, after seeing several of these cases originating in one particular industry, our interest was aroused for an investigation of the probable cause. We

Fig. 1.—Cross-section of a maple log, showing the black dust beneath the cork layer.

found that 75 per cent of the wood being operated was maple, and furthermore that in most of the maple ties there was a black dust of the consistency of lampblack beneath the cork layer of the bark.

The bark is removed from these ties by means of draw knives, which necessarily agitates the dust and compels the men to inhale it in their operations.

In October, 1931, the tie plant employing these men ceased operation owing to economic conditions, and no more patients were seen from this particular industry. Those previously examined showed improvement, and x-ray pictures revealed a marked clearing at a later date.

About this time similar conditions began to occur in an automobile body plant in this locality. Conditions similar in every respect to those we had previously been studying were found, and on investigation the infected group, consisting of 36 patients, was found to be among the sawmill employees. Investigation further revealed the fact that about 75 per cent of the logs were maple, and examination showed a dust similar to that found in the ties. At the time, this plant was operating only two or three days a week, so that the affected men had several days to recuperate each week, but on resuming their work the symptoms were immediately aggravated. The symptoms immediately showed improvement when the men were removed from the environment of the sawmill.

An examination of the dust taken from maple logs showed it to be pure spores of a fungus. This fungus has been tentatively classified as the conidial stage of some species of Nummularia. Dr. Thom, Principal Mycologist of the Bureau of Chemistry and Soils at Washington, states that it is a form known as Coniosporium corticola. As a result of experiments on animals it was difficult to correlate clinically the fungus infection with the symptoms presented. The acute onset and the prompt recovery on removal from the environment suggested to us that we were probably dealing with an allergic condition combined with a toxic property in the dust, somewhat similar in action to the asthmatic condition produced by the castor bean dust. Accordingly, our work was directed along these lines, and it correlated our previous findings. Extracts were made from the spores, and injections into the infected group proved to be positive as compared to injections of milk. A suspension was also made of macerated spores, and this likewise gave positive skin reactions as compared to a suspension of flour dust. Five employees in the sawmill, not presenting asthmatic symptoms, were used as controls. These men also showed positive reactions to the extract and to the suspension of macerated spores, but it is possible, and most likely probable, that they may have become sufficiently allergic to produce reactions. Six employees of a sanatorium (of Powers, Mich.) gave negative reactions to both the extract and the suspension of spore dust, as compared with the reactions of the infected group.

The condition may easily be confused with tuberculosis, particularly when there is definite mottling throughout the lungs, with a history of cough, night sweats, loss of weight, rise in temperature, etc. The negative sputum and history of contact, with the improvement of the patient on removing him from the environment of the spore dust, are the deciding factors.

REPORT OF CASES

CASE 13.—*History.*—A white man, aged 28, had a family history that was negative for tuberculosis. He had had influenza in 1918, with satisfactory recovery. He had had an appendectomy eight years before examination. Otherwise, he had always been well, up to three weeks prior to examination, when a severe bronchitis developed.

The patient had been a bark peeler in a railway tie plant for the past four years. During the winter months of 1930 and 1931, the plant closed down and he was out of work, but he

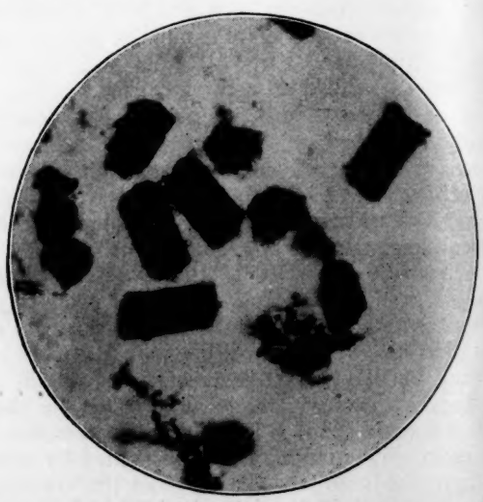

Fig. 2.—A magnification of the black sediment in figure 1, showing cylindric bodies containing numerous spores with many free spores. Reduced from a magnification of 400 diameters.

resumed his work as bark peeler the early part of March, 1931. At this time he felt perfectly well, but about June 1, a cough developed. This was accompanied by a slight amount of sputum. The cough was most pronounced on arising in the morning. Within a few days after the onset of the cough he began to notice shortness of breath. The cough and shortness of breath became progressively worse. He lost 15 pounds (6.8 Kg.) in the twenty-four days previous to examination. He had no night sweats or substernal pain.

Physical Examination.—The temperature was 98.4 F., the pulse rate, 92. The patient was well developed and well nourished. The lips were somewhat cyanotic, and he had the general appearance of being moderately asthmatic. The heart rate was rapid, but otherwise the heart was normal. There were coarse râles in the lower portion of both lungs. These râles extended from the lower angle of the scapula, posteriorly, and the fourth rib, anteriorly, to the base. There were also râles in the lower part of the axilla.

Roentgen Examination.—There was a marked increase in the hilus shadows of both sides, with a general increase in the lung markings on the right side below the second rib, most marked in the base, where it assumed a mottled appearance. On the

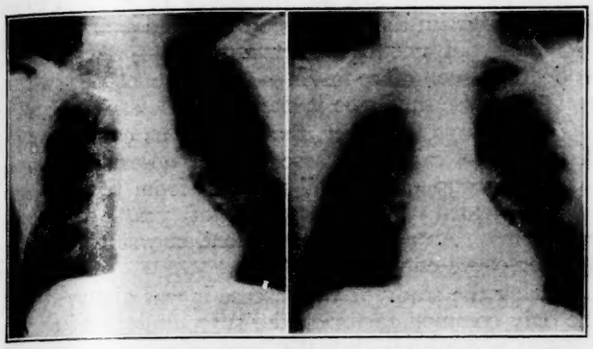

Fig. 3 (case 5).—The patient was a sawmill slasherman. *A*, roentgenogram taken on Nov. 24, 1931. The patient was definitely asthmatic. He worked as a watchman for five weeks prior to the time the picture was taken, with practically no improvement. His work as watchman brought him in contact with the spore dust when making rounds in the mill. *B*, roentgenogram taken on Jan. 31, 1932. Following examination on November 24, the patient was transferred to the salvage department, which removed him entirely from the environment of the spore dust; he dated his improvement from that time.

left side, there was a general increase in the lung markings below the third rib, with a tendency toward mottling in the base. There was a general increase in the trunk shadows extending to the base of the lungs on both sides. The condition was quite equally distributed on both sides, with an increase in the density from the parenchyma of the lung toward the hilus. The apexes were clear. The diaphragm was normal in appearance. The heart was normal in size. A tentative diagnosis of suspicious tuberculosis was made, and the patient was advised to enter the sanatorium for observation.

Course.—July 21, 1931: Following examination on June 24, the patient returned to his work as a bark peeler, where he continued until July 11, at which time the shortness of breath became so marked that it was impossible for him to continue. Since quitting work on July 11 he had gained 10 pounds (4.5 Kg.) and his shortness of breath had improved markedly.

Physical examination: On this date, examination showed a marked clearing of the râles that were present on June 24, and the patient did not present the definite asthmatic appearance that he did on that date. He was again advised to enter the sanatorium for observation, and was admitted on July 28; he remained there until August 21. During his stay in the hospital he gained 4 pounds (1.8 Kg.) and had no fever, and his pulse rate ranged from 64 to 80. When discharged he still had some cough with a slight amount of mucoid sputum. He showed only a slight amount of dyspnea on exertion.

Laboratory examination: Examinations of the sputum were negative for tubercle bacilli, including guinea-pig inoculation. Cultures were positive for Monilia. A Kahn reaction of the blood was negative. The urine was negative for albumin and sugar.

Oct. 29, 1931: Following discharge on October 1, the patient returned to his work, where he continued for four days. During the first two days of work, the men worked entirely on oak ties. The patient felt no ill effects during this time. On the third and fourth days, they peeled the bark from maple ties, and his old symptoms recurred to such an extent that he was again forced to stop work. His symptoms improved as soon as he left this environment. He had done no further work since that time. He still had some dyspnea and considerable cough, particularly in the morning, at which time he raised a clear frothy sputum.

Physical examination: The temperature was 98 F., the pulse rate, 92. There was some accentuation of breath sounds in the right apex, anteriorly, with a bronchovesicular type of breathing at the costosternal junction of the third rib, anteriorly. There were a few fine râles in the lower part of the axilla below the angle of the scapula, posteriorly, on both sides.

Jan. 26, 1932: The patient had not worked since October, 1931. He had gained some weight during the past three months and was practically free from dyspnea. He still had a slight cough, but otherwise his appearance was healthy. He continued to show a few fine râles in the base of the left lung, posteriorly, after expiratory cough. A roentgenogram of his chest taken at this time showed the clearing practically complete. On this date he was given 0.005 cc. of spore extract, intradermally. This produced a definite wheal about 10 mm. wide with an areola 2 cm. wide, as compared with that produced by a control injection of sterile milk, which was about 3 mm. wide. A scratch test was done with a suspension of spore dust. This also produced a definite wheal; a control test with a suspension of flour gave negative results.

CASE 14.—*History.*—A white man, aged 44, had a family history that was negative for tuberculosis. He had had rheumatism twenty-one years previously, at which time he was in bed for one and one-half years. Aside from this he had always been well.

For the past four years the patient had been a bark peeler in a tie plant. He did not work during the winter months of 1930 and 1931, as the plant was closed. He resumed work on April 1, 1931.

At the time the patient resumed his work as a bark peeler he felt perfectly well. About May 1 he started coughing, which was followed within a few days by shortness of breath. The paroxysms of coughing became extremely severe. He raised about 4 ounces (118.4 cc.) of white, frothy sputum per day. He lost 20 pounds (9 Kg.) between April and June 25. His coughing became so severe that he was forced to stop work about June 20.

Physical Examination.—The temperature was 98 F., the pulse rate, 80. The patient was well developed, but a little undernourished. He presented the appearance of a patient with asthma of a moderate degree. His lips were cyanotic; he was extremely dyspneic, particularly after climbing stairs. He appeared sick and looked to be ten years older than the age he gave. The heart was normal. The respiratory movements

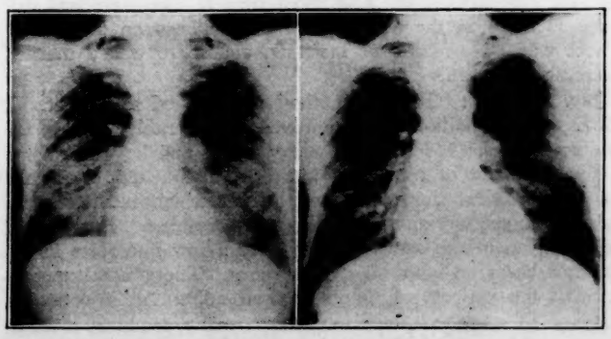

Fig. 4 (case 9).—The patient was a sawmill edgerman. *A*, roentgenogram taken on Jan. 9, 1932. He was forced to stop work on Dec. 18, 1931, on account of asthma. *B*, roentgenogram taken on April 16, 1932. There was a definite improvement in the symptoms. The patient returned to work in another department about the middle of February, and there had been no recurrence of his symptoms.

were shallow and increased somewhat as to rate. There were coarse dry râles in the lower portion of both lungs, extending to the lower angle of the scapulae, posteriorly, and the fourth rib, anteriorly. The blood pressure was 120 systolic and 80 diastolic.

Roentgen Examination.—There was a marked increase in the hilus and trunk shadows on both sides, with a definite increase in the peribronchial markings in both lungs. There was marked density extending from the region of the hilus toward the cardiodiaphragmatic angles, most marked on the

right side. There was an area of clear lung in the region of the costodiaphragmatic angles on both sides. There was evidence of mottling in the midlung region near the sixth ribs, anteriorly, on both sides.

Laboratory Examination.—Several examinations of the sputum were negative for tubercle bacilli. Cultures were positive for Monilia. The Kahn reaction of the blood was negative. The urine was negative for albumin and sugar.

Course.—Oct. 20, 1931: The patient did not work between June 20 and September 5. During this time he showed definite improvement. He returned to his work on September 5, remaining there until October 10. During this time he worked

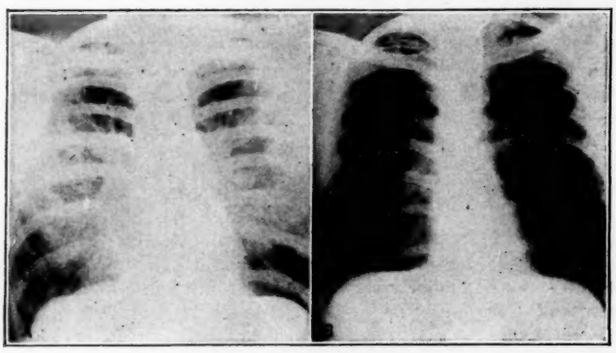

Fig. 5 (case 13).—The patient was a tie peeler. *A*, roentgenogram taken on June 24, 1931. There were marked shortness of breath, cough, expectoration and a loss of 15 pounds one month prior to this examination. *B*, roentgenogram taken on Oct. 20, 1931. The patient laid off during July, August and September. There was a definite improvement in the symptoms. He returned to work on Oct. 1, 1931. He peeled oak ties the first two days, with no recurrence of symptoms. On the third and fourth days, he worked on maple ties, and the asthmatic symptoms immediately recurred.

on various types of wood, and he had an aggravation of symptoms if the ties he was working on were maple. At this time he was having severe coughing spells and was still raising about 4 ounces of white, frothy sputum daily. He still showed considerable dyspnea on exertion, but this had improved since he stopped working, on October 10. There was some cyanosis of the lips, and he was quite dyspneic on exertion. At this time he appeared more or less asthmatic. There were coarse dry râles extending over the same area as he showed in his June examination. A roentgenogram showed considerable clearing compared to the film taken June 25, but there was still some increase in the hilus and trunk shadows on both sides. There was no evidence of mottling, and there was a marked decrease in the hilus shadows.

Jan. 26, 1932: The patient had not worked since Oct. 10, 1931. His condition had improved considerably during the winter months. He still had some cough, and he was raising a small amount of sputum. He stated that he got up in the morning and ran for about two blocks, which facilitated the raising of sputum and improved his breathing. His weight remained about the same. There were a few fine râles in the extreme bases on both sides, posteriorly. The general appearance of the patient had improved markedly. An injection of 0.005 cc. of spore extract, given intradermally, produced a wheal 6 mm. in diameter with a definite areola 10 mm. in diameter. An injection of sterile milk for control produced no definite elevation. A scratch test was also done and produced a definite elevation about 1 mm. in width; a control test with flour dust gave negative results.

LABORATORY EXPERIMENTATION

After making certain that there were no tubercle bacilli, the mouths of 11 patients were cleansed with an antiseptic solution, and the sputums were collected in sterile bottles for further study. Cultures were made on plain, dextrose, beerwort and Sabouraud's agar for the presence of yeasts and molds. At the same time a number of control specimens from the wards of the City of Chicago Municipal Tuberculosis Sanitarium were cultured. Seven of the 11 sputums revealed a few colonies each of a white, cottony growth, 5 of which seemed to be, according to growth and fermentation reactions, Monilia tropicalis, and 2, Monilia albicans; 2 of the former killed only rabbits in large intravenous doses (1 cc. of a heavy emulsion), but not in smaller doses. The lesions produced were multiple small abscesses throughout the body, especially in the kidneys, in which the oval yeast bodies were visible plainly and a few short mycelia were present.

These observations were considered inconclusive so far as the etiology of the asthma was concerned, because only 7 of the 11 specimens of sputum were found to contain these forms on repeated examinations, and they did not represent a single species. This tended to discount the findings still more, because whatever the cause might be it should be the same for all.

The findings, however, that caused us completely to discount the value of these culture observations was that the group of control sputums from the Chicago region yielded the same types of yeastlike microorganisms. As a result, our attention was directed to another cause entirely.

During the study of the disease it was observed that the only common factor in the surroundings of all the patients was a black dust that seemed to come from the bark of maple logs. This dust, on examination, was found to resemble fungus spores, the identity of which has not been definitely settled, although an extensive amount of study has been made on it. In the laboratory of the Municipal Tuberculosis Sanitarium, the common mediums used for fungi yielded only a sprouting of the spores with a very short extension of hyphal threads, but none of these sprouts grew to any length. The spores were then sent to Dr. F. L. Stevens of the Department of Botany, University of Illinois, who reported that he had assigned the work to Miss Viola Michael, whose report is as follows:

Mediums used: dextrose broth, lactose broth, saccharose broth, glycerol broth, dextrose agar, cornmeal agar, starch agar, cornmeal plus dextrose agar, maple bark extract agar, fresh apple (sliced), fresh potato (sliced), fresh carrot (sliced), sterile maple twigs, and sterile maple bark and wood. In all of the aforementioned mediums, mycelium was formed, but in no case

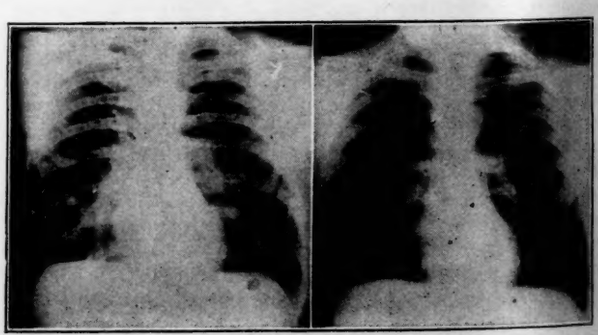

Fig. 6 (case 14).—The patient was a tie peeler. *A*, roentgenogram taken on June 24, 1931. The patient was definitely asthmatic. He lost 20 pounds in the two months preceding this examination. He had severe coughing paroxysms. He stopped work on June 20, 1931. *B*, roentgenogram taken on Oct. 20, 1931. The patient improved sufficiently to return to work on September 5. He continued at his work of peeling ties until October 10. There was a definite aggravation on the days he worked on maple ties.

could any spores be found except the spores that had been used for inoculation. These spores are oval, single-celled, thick-walled, reddish brown, and form black masses between the layers of the periderm of the maple tree.

The mycelium arising from these spores is septate, profusely branched and hyaline. The cells of the mycelium are very

irregular in shape — sometimes rectangular and sometimes almost oval or square. The branching is frequently penicillium-like.

Microtome sections of the bark in which the spores were found show numerous spores and abundant mycelium, but up to the present time no spores have been found attached to the mycelium in any way. The mycelium exists both inside and between the wood cells. The mycelium found in these sections was usually dark, but frequently a section of hyaline cells was found. Therefore, it seems that the mycelium may be either hyaline or dark.

The spores were also submitted to Dr. R. R. Sayers, Chief Surgeon of the United States Bureau of Mines, who reported in a communication on March 24, 1932, that the organism had been tentatively classified as the conidial stage of some species of Nummularia. He further reported that Dr. Thom, Principal Mycologist of the Bureau of Chemistry and Soils, stated that it is a form known as Coniosporium corticola, which was described in the *Journal of Mycology* in 1889 (p. 69).

As we thought that we were more probably dealing with the action of a foreign body than that of a parasite, we set out to resolve such action, if possible, into any components that it might possess. With the aid of Dr. Meyer Lichtenstein, of the City of Chicago

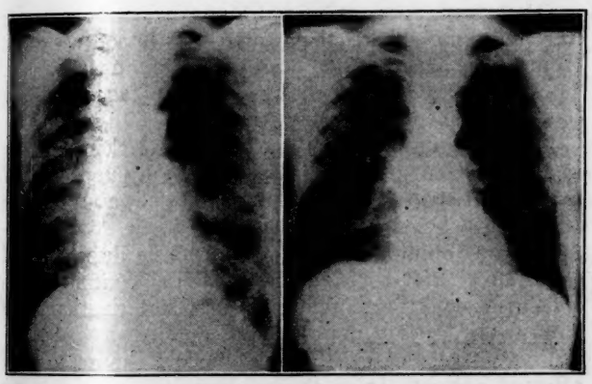

Fig. 7 (case 16).—The patient was a sawmill trimmer. *A*, roentgenogram taken on Oct. 8, 1931. He stopped work on Sept. 29, 1931, because of a severe asthmatic condition. He had a severe cough and night sweats and lost 15 pounds in the two months prior to laying off from his work. *B*, roentgenogram taken on Jan. 7, 1932. The patient had not worked since Sept. 29, 1931. The dyspnea had practically cleared up. There was no cough or expectoration, and the patient had gained 20 pounds since October 8.

Municipal Tuberculosis Sanitarium, 3 types of material were prepared from the spores for experimentation: a lipoid extract, a protein extract (with Coca's solution) and the dark residue left after the double extraction. The lipoid extract was tested for toxicity by inoculating it in various dilutions under the skin of a guinea-pig and was found to produce nothing but a fleeting local reaction. The protein fraction containing 58 mg. of nitrogen per hundred cubic centimeters of extract likewise produced only a temporary local reaction, while the black residue from the spores produced a reaction like the spores themselves. This type of reaction will be given more in detail by describing the lesions produced in a guinea-pig following subcutaneous inoculation of 0.2 cc. of emulsion preserved in 0.5 per cent phenol at weekly intervals for three weeks. At the end of five weeks, the animal was killed, and the lesions were sectioned and examined.

Section 1.—After one week there was an abscess consisting of polymorphs mixed with numerous spores, around which was a wall of fibroblasts. There were a few atypical giant cells along the inner margin of the capsule.

Section 2.—After two weeks the fibrous tissue had extended into the abscess, and large numbers of atypical giant cells appeared in the fibrous wall surrounding the abscess. There were numerous large phagocytes containing from 1 to 10 or more spores.

Section 3.—After three weeks the giant cells had increased until they occupied practically half the space in the fibrous capsule. The spores appeared to be "herded" together in great groups with giant cell formations around them. Some of these were from 10 to 20 times the size of ordinary giant cells. In some of the giant cells there remained only black pigment, only the outline of the spores remaining. This black pigment appeared to be the last foreign particle to disappear.

Sensitization experiments were attempted also by inoculating the spores (*a*) subcutaneously and (*b*) intraperitoneally in doses varying from 0.05 to 0.2 cc. for 5 weekly injections. The protein extract was likewise used in an attempt to produce sensitized animals. After 5 injections, 5 each of these animals with 2 controls were subjected to breathing the spore dust in a closed chamber for two hours every other day. As might be expected, sensitization was produced, and the sensitized animals seemed to show distress, especially those that had received the spore dust. One died the first night after breathing the dust. The lungs were inflated and showed numerous punctate hemorrhages resembling an anaphylaxis. As it was the object of the experiment to produce a chronic condition of the lungs so that we might understand the type of pathology produced in human patients, if possible, the other animals were given lighter dosage over a longer period of time.

It was established by the clinical course of the patients as well as the subcutaneous inoculation of the guinea-pigs that there was a toxic action produced by the whole spores. Whether this was a local toxic action, a sensitization or both was the problem that seemed to present itself. We were convinced that there was an unusual local toxic action. It was unlike any effect of dust that we had ever seen in occupations in which large quantities of dust were inhaled. For example, men in grain elevators inhale large quantities of grain dust, but only a few become incapacitated. Among the tie peelers, however, 30 per cent of the employees who continued to breathe the spore dust for more than two months became afflicted. After studying the local action in guinea-pigs, it seemed that it were possible for the same foreign body action to exist in the lungs of the patients, particularly along the lymphatic trunks, similar to that which existed in the lesions of the guinea-pigs. As the inoculations into tie peelers were repeated daily for a long time, a cumulative action resulted and gradually the patients developed the clinical symptoms described, which did not disappear until the foreign bodies were slowly removed by phagocytosis and digestion. On reappearance of the patients in the contaminated surroundings, however, they experienced distress immediately, indicating that a type of protein sensitization had most likely developed similar to that produced by rust spores, castor bean dust and boxwood dust, cited before.

We then attempted to carry out skin reactions to prove or disprove such a hypothesis. This work consisted of two parts: (*a*) active and (*b*) passive. The active tests and results have been described previously.

For passive transfers (Prausnitz-Küstner reaction), blood from patients with active conditions was drawn

and sent to Chicago by mail in sterile containers, where the serum was drawn off, filtered through a Berkefeld filter and inoculated into patches of normal skin by Dr. Lichtenstein, followed in forty-eight hours by the inoculation of protein extract. The results were unsatisfactory owing to a nonspecific reaction. The serum was then added directly after treatment with 1:1,000 merthiolate, and again the local reaction was too violent for suitable observations. Next we had the serum drawn off at the time the blood was drawn, sealed in sterile ampules, packed in ice in a vacuum bottle and shipped by mail as before. The serums arrived in a frozen condition, but permitted experimentation. The experiments were carried out in the usual manner on fresh serum, and after forty-eight hours 0.05 cc. of the protein extract containing 58 mg. of nitrogen per hundred cubic centimeters of solution was inoculated into each sensitized area with suitable controls. The results, however, did not show sufficient difference to warrant conclusions. While not entirely negative, they were decidedly inconclusive and indicated an inadequate protein extract, a deterioration of the reagin by freezing or a weak and atypical sensitization that had not been met with before. More experimentation is being contemplated to prove this point definitely.

The conclusions that may be drawn from this experimentation are:

1. The spores are irritating to the animal tissue as shown by the inflammatory reaction produced when inoculated subcutaneously into guinea-pigs.

2. A foreign body reaction seems to be caused by the dark brown covering of the spores, after lipoid and protein extraction.

3. The spores are capable of causing a sensitization, following parenteral administration to guinea-pigs, that resembled anaphylaxis in its pathologic aspects.

4. The passive transfer of reagin was not demonstrated in human patients, although there was a strong suggestion of active protein sensitization.

COMMENT

We have been unable to find records in the literature connecting asthmatic conditions with spore dust found in timber products. The condition that we have observed is remarkably similar to the cases Cadham reported of men sensitized to the spores of rust-infected wheat. The proper heat and moisture must be present to promote the growth of the fungus. Thus, apparently, it is not found in freshly cut or green logs. Owing to the economic depression, most of the wood being worked today was cut into logs from one to two years ago, and this wood has been carried through a hot, moist summer, which would be favorable to the growth of fungus. The question may be raised concerning the rôle of wood dust in this condition. We feel, however, that the prompt disappearance of symptoms following the removal of workers from the sawmill to other parts of the body plant where they come into contact with the wood rules that out.

From an industrial standpoint, the condition would be compensable in states with occupational disease features in their compensation laws. As a precautionary measure, we would suggest the spraying of the saws with water during the sawing operation. Since this procedure was instituted in the sawmill mentioned, there have been no further cases occurring in the past three months. When men show indications of sensitization to this particular spore, they should immediately be removed from the particular operation exposing them to the spore dust. The wearing of respiratory masks offers no protection to the employees. A "stagger" system of employment has been suggested, but it is hazardous for the employer, as it extends his liability over a greater number of employees. The condition does not occur in men working with green timber. The working of only freshly cut timber products offers the safest solution. We have had an opportunity to study 35 cases during the past ten months, but our records show the existence of about 46 cases occurring in only 2 of the industries in our locality. It is not at all improbable that there have been a great many cases occurring in other sections of which there are no records and on which no definite diagnosis was made.

SUMMARY

A clinical, roentgen and laboratory study has been carried out on a series of 35 patients in the Upper Peninsula of Michigan. The symptoms were acute and typically asthmatic. The predominating symptoms were dyspnea, cough, loss of weight and varying amounts of expectoration. Certain patients reported a rise in temperature ranging up to 103 F., with occasional night sweats, and a few complained of substernal pain.

On investigation it was found that these patients were working where they came in contact with dust from maple logs that had been cut for more than a year. The dust proved to be spores of a fungus, tentatively classified as Coniosporium corticole.

Extracts of the spores produced local skin reactions in the affected group, as did likewise a suspension of macerated spores, while control tests gave negative results.

It is our opinion that this condition is due to a local toxic effect and foreign body reaction combined with a delayed effect resembling protein sensitization in its clinical and certain immunologic aspects.

Preventive measures should include the removal of affected patients from the environment of the spores as soon as they are detected, or the saturation of the saws during the working process.

From an economic standpoint, it would be more profitable to work only with freshly cut logs and thus avoid the risk of penalty under the workmen's compensation act.

Since this article was submitted for publication, C. Aubrey Richards, Pathologist in Charge, Forest Products Laboratory, Madison, Wis., sent us the following information:

The fungus on maple which you sent us several months ago has at last been identified as Coniosporium corticale E. and E. This fungus has also been found recently on dying maples, hickories, and basswoods in some virgin forest north of Fond du Lac, Wisconsin. It is one of the Fungi imperfecti, and is probably the imperfect stage of another fungus which might be causing the disease of the trees.

ABSTRACT OF DISCUSSION

DR. FRANCIS M. RACKEMANN, Boston: The toxic effects, the illness and loss of weight, the changes in the roentgenogram and the production of abscesses in guinea-pigs all suggest to me that the authors are probably dealing with a true infection, but in addition to this some of their patients developed asthma. The interpretation of that asthma presents an interesting and difficult problem. Wheezy dyspnea occurs in silicosis in adults, and also in children who have marked capillary bronchitis, and is due to the effect of the bronchial exudate in those cases. On the other hand, allergy may be defined as the capacity to develop

sensitiveness to foreign substances, including bacterial substances, and there is evidence that the allergy depends on a fundamental background, the nature of which is quite unknown. The authors' patients had asthma again within forty-eight hours after return to their work, having been free from symptoms after the first attack. A good many had positive skin tests, and I believe they may constitute another example of acquired sensitiveness to a characteristic and specific substance found in their occupation. But in other allergic conditions only a few individuals among all those exposed will develop asthma. For example, of all the girls who powder their noses, only a small proportion develop hay fever-like symptoms. Of all who are exposed to horses, only a few develop horse asthma. There is a reason why only a few of these persons develop symptoms. Only a few have the fundamental background of allergy; that is, the capacity to develop sensitiveness. In order to bring out this background, which is undoubtedly present in these cases, I should like to ask four questions: 1. Do the ten cases represent all those men exposed to maple dust or only a part of them? As a matter of fact, the authors have answered this already by saying that there were thirty-five cases in the whole series but that only ten present these characteristic symptoms. 2. How many of these cases show some other manifestation of allergy besides the asthma? Did they have hay fever, eczema or urticaria, which might illustrate their capacity to become sensitive to still other substances? 3. Do any of the men give evidence of allergy in their families, showing inheritance of this allergy? 4. Do any of them have a blood eosinophilia, which is so common in allergic cases of all sorts?

DR. FRANK SMITHIES, Chicago: In practically none of the instances of sporotrichosis reported in 1927 by Bridges and Claypoor was there evidence of associated asthma. However, in the study of the allergic asthmatic manifestations, one must not lose sight of the concomitant organic disease. Patients with fungus infection of the lungs, apart from allergic asthma, may exhibit pathologic changes quite as serious in termination as in tuberculosis. In the mild cases suspected of tuberculosis but in which tubercle bacilli are not found, in the presence of allergic manifestations, caution should be exercised in making tuberculin tests. In our practice, a recent experience emphasized this. To a patient allergic but not known to be so, 2 mg. of old tuberculin was given intradermally in the forearm. Within twelve hours there were extensive ulcerative lesions in the mouth, the pharynx and the alimentary tract. Many such lesions bled freely. The patient was extremely ill from the acute anaphylactic response. The search for tubercle bacilli should be continued in all these patients exhibiting fungus infections because in Bridge's series about one sixth of the patients had tuberculosis in association with the fungus infection. In fungus infections in which the asthmatoid manifestations are associated with extensive pathologic changes in the bronchi serious complications are possible. Lung abscess and bronchiectasis are distressing, even fatal, concomitants: the thick foul abundant sputum is characteristic. Fatal hemorrhage is not uncommon. Certainly, if the fungus infection introduces the factor of asthma as an allergic manifestation, the clinical picture becomes complex and distressing. Spores exhibit intimate relationship to the lymphatics and blood vessels. In such circumstances, not only is it possible to secure a rapid systemic toxic response to the fungus but, as Bridge and Claypool demonstrated, spores actually may enter and remain viable in the blood stream. In the examinations of these patients, I should like to know about the blood counts, the blood cultures and the presence in the sputum of organisms other than fungi or spores. Certainly the treatment of the sporotrichosis is greatly complicated by the associated asthma. I should like to know what therapeutic measures were exhibited apart from isolating the patients from sources of infection. The economic side has been stressed, but perhaps not sufficiently. In our section of the country we are apt to send asthma sufferers to upper Michigan or Wisconsin. It requires consideration as to whether we should still advise some patients who already have asthmatic manifestations or hay fever annually to change their residence. Away from water they may be subject to sensitization from wood spores and when near water they may be not quite so comfortable but, perhaps, will not be endangered by the wood-borne fungi.

DR. N. F. THIBERGE, New Orleans: In our clinic about a year and a half ago a grain elevator worker presented himself for treatment. We tested him for all the allergens at our disposal, and he was negative except for a slight susceptibility to wool. He was directed to get scrapings from the dark corners around his place, and the examination yielded a profuse growth of spores. Between his two examinations he had not exposed himself to the grain dust outside of the time he took to collect it, so he reported rapid improvement. He furnished us with material with which we could test other patients, and we found a direct parallelism between the reaction for wool and the reaction for the spores collected from the scrapings of the grain elevator worker. I should classify this case as allergic. Professor Castellani several years ago called attention to the frequency with which spores attack the bronchial tree and the pulmonary tissue, and it was his recommendation that high doses of potassium iodide be given. I followed the advice with great success in cases in which I suspected spores as a cause of allergy. The roentgenogram of allergic asthma resembles closely the roentgenogram that the authors showed. The apical area was not much involved but increased density was more marked near the hilus, extending down to the base, so much so that it was mistaken for a syphilitic condition; but the diagnosis was not confirmed by the Wassermann reaction. Examination of atmospheric plates exposed near the work should be used as a check. I do not believe the examination of sputum yields very much, because at the time of the asthmatic spell the asthmatic person is not likely to expel many spores. It is only during convalescence that one would expect to obtain much information from examination of the discharge. The collection of the spores and the making of the culture is easy, and I think it opens up a field of investigation to determine whether there is not a parallelism between wool and spores. I believe that in a good many cases, in which everything else is negative and only the reaction is positive for dust, one should take into consideration the fact that spores really are at the bottom of these cases of asthma.

DR. JOHN W. TOWEY, Powers, Mich.: In answer to Dr. Rackemann's inquiry regarding the family and the personal history of previous allergic conditions, the history was negative in those cases investigated in this regard, although this examination was not carried out to the fullest extent in all our cases. No eosinophils were demonstrated in the sputums, and the blood pictures were essentially negative. We considered early the possibility of a pneumonoconiosis. The tie workers were idle during the winter months preceding March, 1931. They returned to work in that month. The symptoms began to develop in June, 1931. The rapidity of onset following the return of these men to their work discounted to a great extent the factor of an existing dust inhalation disease. If we were dealing here with an infection we should expect it to be progressive to a certain extent after the men discontinued their work, but here we found the symptoms beginning to improve immediately and a corresponding clearing in the roentgenograms as soon as they were removed from the spore dust environment. Sputum cultures in our patient group showed Monilia albicans and Monilia tropicalis. These did not vary any from our control sputum group and furthermore, since we found two species of organisms, it further discounted these organisms as being etiologic factors. We do recognize the spores as foreign bodies having a toxic effect and producing an inflammatory condition in the lung. As regards the incidence, the tie plant mentioned employs 200 men. Of these employees only 32 come into direct contact with the bark as it is taken from the ties, and of this group only 10 developed definite asthmatic symptoms. Out of 800 sawmill employees, 36 presented dyspnea to such an extent that it was necessary either to take them out of their occupation or to transfer them to other departments of the mill where they would be removed from the spore dust environment. We recognize that this condition is not typical as regards its allergic aspects. Allergy is comparatively a new subject about which there still remains much to learn, and it is possible that we are dealing here with an atypical form of allergy not encountered heretofore.

SARCOMA OF THE CHOROID

HISTORY OF SIX CASES, WITH EARLY OPERATION

HERBERT MOULTON, M.D.
AND
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FORT SMITH, ARK.

Sarcoma of the choroid occurs about once in every three thousand pathologic eyes (Hill Griffith[1]). Cases actually seen in the first stage are still rarer. As the six patients whose cases will be reported were seen and operated on at an early stage and were followed up for from five to twenty-seven years, it was thought that they might be of interest, especially in reference to prognosis.

Four of the patients were operated on during the first stage.[2] In two cases (cases 3 and 6) the condition was probably entering the second stage, as there was

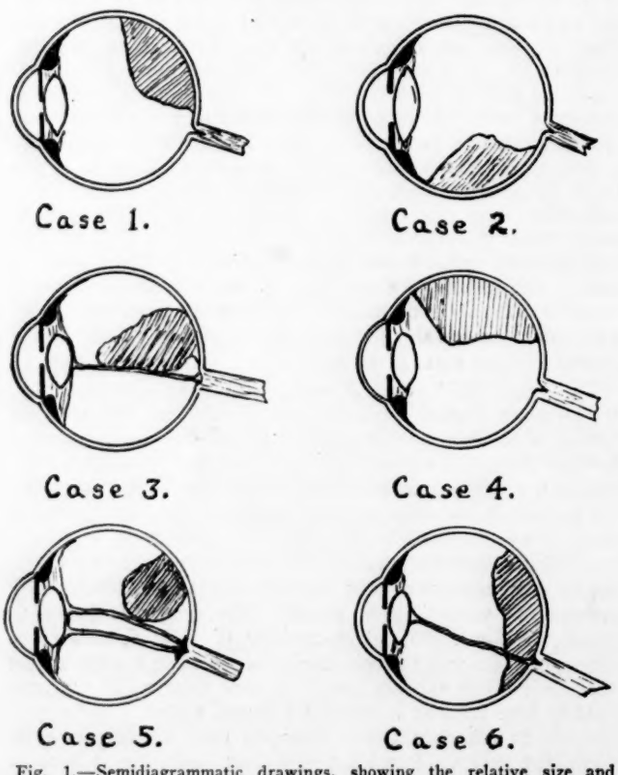

Fig. 1.—Semidiagrammatic drawings, showing the relative size and position of the various tumors.

beginning increased tension. However, they may be properly included in the series because involvement of the outer coats of the eye had not occurred.

It is generally agreed that when a tumor is seen in the vitreous chamber of a human eye, the eye should be enucleated. In an adult such a tumor is probably a sarcoma. If allowed to grow out of the eyeball, the tumor will almost certainly cause the death of the patient.

On the other hand, if it is removed before the outer coats of the eyeball are involved, it is less likely to recur or to be followed by metastasis. It is known that even after the earliest operation metastasis sometimes follows, while local recurrences are very rare.

Two questions present themselves:

1. What degree of safety can one promise a patient operated on in this early period? 2. What period of time must elapse before safety is assured?

Most published early cases have been reported soon after operation, without an opportunity to observe or record the subsequent history.

Summary of Cases

Case Number	Age at Operation	Status After Operation	Type of Sarcoma
1	44	Living and well today, after 28 years	Small spindle cell
2	58	Well 15 years; death from apoplexy	Leukosarcoma; small spindle cell
3	53	Living and well today, 16 years later	Small spindle cell
4	52	Metastasis and death 4 years and 8 months later	Small spindle cell
5	50	Metastasis and death 2 years later	Large round cell
6	42	Generalized sarcomatosis and death 19 years later	Large round cell

In all but one (case 3) of the six cases here reported the diagnosis of an intra-ocular tumor was made with the ophthalmoscope. In that one, transillumination made the diagnosis reasonably certain. Increase of tension had recently begun. Total detachment of the retina was present, but section, after enucleation, showed that the outer coats of the eye were not involved by tumor cells.

REPORT OF CASES

CASE 1.—*Small spindle cell melanosarcoma.*

Miss B., aged 40, in May, 1899, had normal vision in each eye with + 2.75 sphere.

On Oct. 10, 1903, four years and six months later, she was seen again because of disturbed vision for about the past two months. Vision of the right eye was found to be normal when corrected; that of the left eye, 20/200 unimproved. A large, well defined tumor was seen in the temporal half of the retina, leaving the disk and nasal half of the fundus visible through

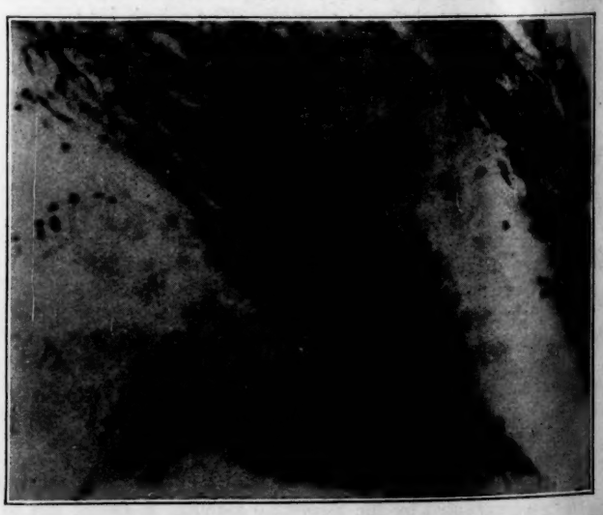

Fig. 2 (case 1).—Small spindle cells, pigmented; reduced from a magnification of 320 diameters.

the clear media. The diagnosis was probable sarcoma of the choroid. Enucleation was advised. Dr. Adolph Alt and Drs. Green, Ewing and Post of St. Louis examined the patient and confirmed the diagnosis. However, it was not until seven months later, in June, 1904, that she consented to the operation, which was performed by Dr. Ewing. At the time of writing, twenty-eight and a half years later, she was living and well.

Read before the Section on Ophthalmology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

1. Griffith, Hill, quoted by Norris, W. F., and Oliver, C. A.: System of Diseases of the Eye, Philadelphia, J. B. Lippincott Company, 1897, 1898, vol. 3, p. 365.

2. Fuchs, Ernst: Text-Book of Ophthalmology, ed. 7, translated by A. Duane, New York, D. Appleton and Company, 1892, p. 723.

CASE 2.—*Small spindle cell leukosarcoma.*

Frank Benson, aged 58, a farmer, came to the hospital on March 7, 1915. About six weeks before, he had noticed a defect in vision of the left eye, which had been growing worse. Both eyes were white and quiet. The tension was normal. The pupil of the right eye was 2 mm.; it reacted to light. The pupil of the left eye measured 4 mm.; it did not react to light. Vision in the right eye was 20/20; that in the left, 6/200. In the nasal part of the fundus could be seen by the ophthalmoscope and by focal illumination a well defined tumor, filling about one fifth of the vitreous chamber. Very few specks of pigment were scattered on its surface. The pupil was dark when a transilluminator was placed on the upper nasal side of the sclera. Six days later the eye was enucleated. In May, 1930, fifteen years later, the patient died suddenly of apoplexy at the age of 73. He had been well up to the time of his death. This case was reported at a meeting of the Southern Medical Association in Dallas, Texas, on Nov. 8, 1915.[3] The late Dr. Marcus Feingold of New Orleans examined the slide and, in his discussion, expressed the opinion that the case was one of the few nonpigmented sarcomas reported in the literature.

CASE 3.—*Small spindle cell sarcoma with very little pigment.*

Mrs. B. P. G., aged 53, came to the hospital on Sept. 1, 1915. Vision had failed in the right eye for several years, and the eye had been blind for three years. There had recently been

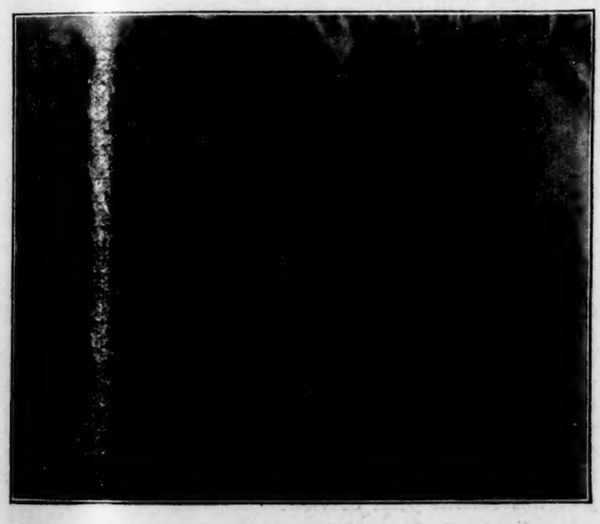

Fig. 3 (case 2).—Small spindle cell leukosarcoma; reduced from a magnification of 100 diameters.

attacks of pain. One week prior to examination morphine was required for relief. On examination, chemosis of the conjunctiva was found. The pupil was dilated. Tension was high, 60 mm. Schiötz. The retina was detached. Transillumination was darker from above and to the nasal side than from other directions. Enucleation was done on October 10. The sclera was intact. The vitreous chamber was partly filled with a growth, which on section was reported to be a small spindle cell sarcoma, with very little pigment, originating in the choroid. The microscopic appearance was much like that of leukosarcoma. At the end of sixteen years, the patient was alive and well.

CASE 4.—*Small spindle cell melanosarcoma.*

Mrs. E. S. H., aged 52, was first seen on Jan. 16, 1924. Ophthalmoscopic examination at this time showed no lesion of the fundus. Vision was 20/20 corrected in each eye. On Oct. 19, 1925, she returned with the complaint of scintillating scotomas for a year. The superficial structures of both eyes were normal. The right pupil was 5 mm. in diameter; it did not react to light. The anterior chamber was normal. Tension was normal, 21 mm. Schiötz. Vision was 5/200 not improved.

In the upper outer part of the vitreous chamber was a dark tumor, which filled one third of the chamber and was easily seen by both ophthalmoscope and focal illumination. Enucleation was done on October 22. Four years and eight months later, in May, 1930, the patient died of "cancer" of the liver. No autopsy was performed, but the surgeon reported that he had opened the abdomen a few months before. As he found an inoperable "cancer" of the liver, he closed the abdomen. The

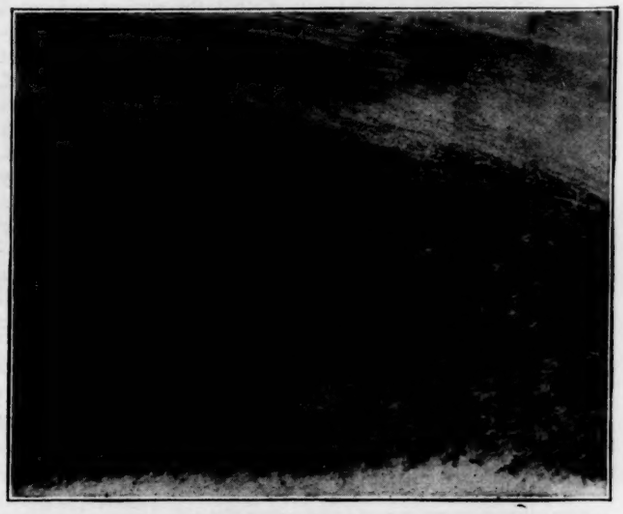

Fig. 4 (case 4).—Small spindle cells, lightly pigmented; reduced from a magnification of 80 diameters.

microscopic diagnosis of the tumor of the eye was small spindle cell melanotic sarcoma.

CASE 5.—*Large round cell melanosarcoma of the choroid.*

Mrs. Jones, aged 50, on Dec. 7, 1923, said that her right eye had never been as good as the left, but that she had noticed vision of that eye failing rapidly for the past four months. We found it to be 4/200. The pupil did not react. The anterior chamber was normal. Tension was 17 mm. (Gradle, Schiötz). A tumor filled one fourth of the vitreous chamber. The pupil was dark to transillumination from below. No inflammatory signs were present. The left eye had normal vision. Enucleation of the right eyeball was urged but refused. Five months later there was no perception of light, the pupil was widely dilated, and the anterior chamber shallow, but still there was no increase of tension. The retina was completely detached.

Fig. 5 (case 5).—Large round cells, pigmented; reduced from a magnification of 320 diameters.

The patient then consented to undergo an operation. The diagnosis was confirmed by microscopic section. In December, 1925, she had a large, rapidly growing tumor removed from the alveolar process. Nodules were reported in the liver and a large mass in the pelvis. Death occurred in the last of December, two years after enucleation.

3. Moulton, H.: South. M. J. 9: 738 (Aug.) 1916.

CASE 6.—*Large round cell melanosarcoma.*

Mr. W. M. Choate, aged 42, a farmer, early in 1909 had a tumor diagnosed as probable sarcoma of the choroid, which was observed by one of us (Dr. H. Moulton). It filled about half the vitreous chamber of the right eye. It was not until after two months had passed, when there was increased tension, but no inflammation or perforation, that the patient consented to enucleation. Sixteen years later, in 1925, he had his gallbladder and appendix removed. The hospital records do not show that any tumor was found in the abdomen. In August, 1927, nodules appeared on the sternum. In a short time others appeared, and by February, 1928, more than a hundred were counted on various parts of the body, under and in the skin. Soon afterward, gastric disturbances appeared, followed by death.

The gross specimen and the microscopic section of the tumor of the eye were preserved to confirm the diagnosis. The metastatic tumors were examined by Dr. Blair, pathologist to Sparks Memorial Hospital, and were reported to be large round cell melanotic sarcomas. The patient lived nineteen years after operation, one year after metastasis was recognized.

SUMMARY

1. There were three cures; two patients were living and well from fifteen to twenty-seven years after operation. One was living and well fifteen years after operation, when he died suddenly of apoplexy at the age of 73.

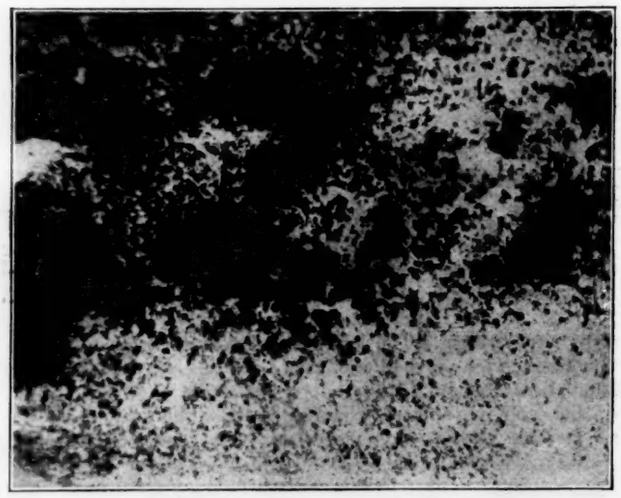

Fig. 6 (case 6).—Large round cells, pigmented; reduced from a magnification of 80 diameters.

2. There were three deaths from metastasis, four years and eight months, one year and ten months and nineteen years after operation, respectively.

3. All of the patients who lived had tumors of the small spindle cell type, one of which was a leukosarcoma.

4. In two of the fatal cases the tumors were of the round cell type, and one was a small spindle cell sarcoma.

Dr. Edward Shumway,[4] in discussing sarcoma of the choroid, said that the round cell is of more importance than the presence of pigment in the production of metastasis.

CONCLUSIONS

Based on this small series, we may infer the following conclusions:

1. Metastasis may occur after the earliest enucleations.

2. It may occur as late as nineteen years after enucleation.

3. It may occur with any type of cell, but the round cell is most malignant.

4. In this series cures were 50 per cent.

Hill Griffith [5] estimated cures after operation in all stages at 50 per cent, but his time limit was only three years, obviously too short a period, as in two of our fatal cases the patients were well for much longer periods.

4. Shumway, E. A.: Am. J. Ophth. **9**: 765 (Oct.) 1926.

5. Griffith (footnote 1, p. 377).

ABSTRACT OF DISCUSSION

DR. MARY KNIGHT ASBURY, Cincinnati: My experience has been much the same as that of the authors, though the results have not been as satisfactory. Dr. Benedict has been kind enough to assist in retracing the series of intra-ocular, melanotic tumors which I reported from the Mayo Clinic before this section in 1924. There were seven eyes containing choroidal neoplasms enucleated in the so-called first stage of the disease; that is, before the onset of inflammatory symptoms. Two patients have not been heard from; three are dead, surviving from eighteen months to four years after enucleation, and two are living and well, one five years and one fourteen years after operation. On the other hand, two eyes, which had reached the inflammatory stage, were removed and the patients were living and well more than five years later. Even the third stage was represented among the long-lived patients. One patient with choroidal melanotic neoplasm gave no history of inflammatory attacks, but when the eye was removed orbital extension of the tumor was found. This patient was alive without recurrence or evidence of metastasis eight years later. In the microscopic examination some points to consider in estimating the degree of malignancy are the regularity or uniformity of the cells, the number of mitotic figures present, and the amount of cytoplasm. Highly malignant, rapidly growing cells develop little cytoplasm. The cells of the tumor in the eye of the patient who died of abdominal metastasis eighteen months after operation had vessels of varying size, little cytoplasm, and numerous mitotic figures. The tumor of the patient well five years after removal was made up of cells with abundant clear cytoplasm. In 1924 I was convinced that the amount of melanin in the tumor was of great prognostic value, but now I believe it is of little help. True, the patient who is alive and well fourteen years after enucleation had a very black neoplasm, but the two tumors that were removed after the onset of the inflammatory second stage contained relatively little pigment, and some of the patients with black tumors are dead. The results in the authors' cases support this revised point of view.

DR. LAURA A. LANE, Minneapolis: In the twenty-five year period following the Kerschbaumer report I have collected nearly 1,000 cases of sarcoma of the eye; 356 of these reports are on sarcoma of the choroid. Many questionnaires have been sent out to complete the study, and 171 of the 356 choroidal cases are practically at present complete. I submit the following data, some of which are at variance with the report of the authors. With the first conclusion of their paper, my work agrees. Dr. John Weeks has reported the smallest sarcoma of the choroid on record. His case was of the spindle cell type, and metastasis occurred twelve years later. There are numerous other reports in which the growth was exceedingly small at the time the eye was enucleated, and in most of these cases metastasis occurred within the first year; hence early removal in the earliest stage will not prevent a fatal issue. Of the 171 cases followed, 80 patients are dead and 88 have developed metastasis, and at least 12 others had or have at present a probable metastasis. Metastasis to the liver is the most common site. The other organs concerned in metastasis are about in this order: the pancreas, kidney, heart, lungs, brain, and then the skin. The duration of life after operation ranged from one year or less (sixty-nine cases) to twenty-four years (one case). Only two cases on record as yet have gone thirty years without metastasis. The largest number of deaths has been among those patients who had a spindle cell type of tumor. There were 29 spindle cell type tumors among the 80 known dead and 124 among the 356 reports of sarcoma of the choroid. There were 23 mixed cell type tumors among

the dead and 69 among the 356 reports, while only 15 of the known dead had a round cell type of tumor, and only 53 of the 356 were in the round cell category. Only 13 reports of those dead of sarcoma of the choroid are incomplete, and only 23 among the 356 reports are incomplete as regards the type of cell. It appears, then, that the third conclusion must be reversed. I think the confusion has arisen from the fact that the orbit is the next most frequent part of the eye to be attacked by sarcoma, and the round cell type fatalities predominate slightly in orbital sarcoma. My data do not give as high as 50 per cent cures with surgery alone. I am inclined to think the final tabulation will show figures more nearly approaching de Schweinitz's estimate. May I make a final plea for fuller reports and longer follow-up work, and I would greatly appreciate more data on cases published since 1900.

DR. EDWARD JACKSON, Denver: One practical point is worth referring to. That is, in the individual case the chance for escape from a fatal termination is intimately bound up with early recognition, and there is one means of early recognition that I am sure has not been used as much as it might be. That is the diagnosis, through the detached retina, of a tumor lying behind the detached retina, by use of direct sunlight. That is practical. I called attention to it more than thirty years ago. I have applied it in all cases in which there was a presumption of a tumor of the choroid and which was hidden by the later detachment of the retina. In none of those cases was there failure to indicate whether or not there was something behind the detached retina; and the indication was not a mistake, since it was verified by removal of the eyeball. If the eye is blind there is scarcely any limitation to the ophthalmic examination; but even if it is not blind, if there is a presumption of tumor, it is worth while to investigate by using direct sunlight.

DR. E. C. MOULTON, Fort Smith, Ark.: A malignant growth diagnosed and operated on early offers the patient his best prospect for life. It is most reasonable to expect a favorable prognosis in those cases in which the growth is closed within such an impermeable tunic as the sclera, and especially when the bulb and its contents are removed early. However, in half of these six cases of sarcoma in which the patients were operated on well within the limits of the so-called first stage, there has been metastasis and death. One of our purposes in bringing these cases to attention is to note that the round cell types were the most frequent to metastasize, and that those of the spindle cell type were less likely to do so, especially if lacking or nearly lacking in pigment. We feel particularly that these cases are the more valuable and significant because of the rather unusual length of time that they were kept under observation. It is not unusual for an instructing clinician in escorting a student through the wards to remark: "Here is a patient with one eye removed and nodules on his liver. What is the matter with him?" If we as ophthalmologists can do any one thing to overcome this little gesture toward levity, it is to be ever on the alert in our differential diagnosis of beginning dimness of vision and enucleate early. It was not our intention in presenting these cases to go into the more technical phase of factors concerning prognosis, but in case 5, in which death occurred in a fraction less than two years, it was no more than to be expected because of the microscopic picture of the tumor. There are mitotic figures to be seen and a striking picture of the pseudorosets as described by Major Callender. It is a highly malignant type of sarcoma. In the other five the microscope was not of value in giving an opinion as to life expectancy.

The Reactions of the Eye to General Disease.—The first disease which occurs to one in connection with the lens is, of course, diabetes, with its well known complication of diabetic cataract. There is another complication, however, which is quite common though not so well known, and that is alteration in the refractive index of the lens. This is of great clinical importance; what probably happens is that, as a result of alteration in the osmotic pressure of the eye fluids, accompanying the rising sugar concentration in the blood, fluid tends to enter the lens. This makes it bulge, increases its convexity, and so renders the eye more myopic, a change which may take place without any development of cataract.—Williamson-Noble, F. A.: *Lancet* **1**:1345 (June 25) 1932.

COMPLEMENTAL FEEDING IN THE NEW-BORN INFANT

ITS EFFECT ON BREAST NURSING

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AND
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The growing practice of supplementing the natural food of the infant in its first week of life prompted a study of the effect of this procedure on the infant as well as of its ultimate effect on the supply of breast milk. As is well known, the incomplete emptying of the breast makes for a diminishing breast supply and early weaning of the baby.

Our observations were made on infants born in the hospital who could be followed closely for at least ten days. Although many were followed for a longer period, comparisons were made on their progress up to the tenth day of life, because it is at this time that many begin to leave the hospital. We have followed the weight progress and food intake of nearly 900 normal infants.

Three general plans were followed in the management of these children. The first group, consisting of 450 infants, were breast fed exclusively. The second group, comprising 256 infants, were given a limited quantity of artificial food if the breast milk was not sufficient for the theoretical needs of the baby. The third group were offered complemental feedings freely if they manifested signs of hunger or if the gain in weight was not satisfactory.

TYPES OF FEEDING

Breast Feeding Exclusively.—The first group was from the City Hospital, where a great effort is made to have the babies breast fed. The bottle is never started without some good reason and more stress is put on obtaining a good breast supply than on the infant's hunger and gain in weight. When 88 per cent of the infants from this nursery go home, they are being fed on the breast only. Our figures were for consecutive infants entirely breast fed when leaving the hospital.

TABLE 1.—*Weight on Tenth Day Compared to Birth Weight*

	Breast Fed Exclusively		Breast and Complemental Feeding	
	Number	Per Cent	Number	Per Cent
Regaining birth weight	140	31.1	174	68.0
Not regaining birth weight	310	68.9	82	32.0
Total	450		256	

In this group of 450 infants given breast feedings thought to be adequate or nearly so, 140, or 31 per cent, regained their birth weight by the tenth day. Of the 310, or 69 per cent, under their birth weight, the average deficiency was 2 ounces (56 Gm.) (tables 1 and 3).

Breast Feeding With Limited Complemental Feedings.—The second group, comprising 256 infants, were from the University of Kansas Hospital, where for the past few years it has been customary to start

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complemental feedings for those infants who did not obtain any breast milk on the first day or whose supply of breast milk was insufficient as determined by weighing before and after nursing. When it was found that the milk obtained at each nursing did not measure up to the theoretical requirement, the deficiency was made up with artificial food. We used Scammon and Doyle's figures [1] for stomach capacity to compute the amount that the baby should take at each feeding (table 4). The complemental food consisted of a mixture of evaporated milk, water and sugar containing 20 calories to each ounce of body weight. A nurse held the baby while it took the bottle, and an effort was made to give the prescribed quantity.

TABLE 2.—*Infants Regaining Birth Weight On or Before Tenth Day of Life*

Day	Breast Only		Breast and Complemental Feeding	
	Number	Per Cent	Number	Per Cent
1	1	0.22	3	1.17
2	0	0.00	0	0.00
3	4	0.89	7	2.73
4	8	1.77	14	5.47
5	21	4.67	27	10.55
6	21	4.67	31	12.11
7	22	4.89	46	17.99
8	16	3.56	19	7.42
9	21	4.66	15	5.86
10	26	5.77	12	4.69
Total	140	31.10	174	67.9

It is believed that everything was done to exhaust the breast supply and to promote the flow of milk before offering the complemental feeding. In this group, as well as in the former, the nursing routine was every four hours day and night. Until the milk became sufficient for sustained attempts at nursing, the baby was allowed to nurse for only three minutes, and as the milk became more abundant the time was lengthened. This reduced the incidence of fissured nipples, and promoted successful nursing.

As the breast filled with milk, usually on from the third to the fourth day, the quantity of complemental food was decreased, or it was withdrawn entirely. If it was found that the breast supply was not sufficient for daily gains in weight and did not measure up to the stomach capacity, enough of the complemental food was given to make up the deficiency. The infant was not allowed all the artificial food he would take.

TABLE 3.—*Weights of 450 Infants on Breast Compared with 256 Infants on Complemental Feeding*

	Average Weight, Pounds	Average Over Birth Weight (140 Infants)		Under Birth Weight (310 Infants)	
		Ounces	Per Cent	Ounces	Per Cent
Breast only	7.36	0.07	0.6	2.1	1.8
		(174 Infants)		(82 Infants)	
Breast and bottle	7.28	2.89	2.5	1.2	1.03

In this group in which complemental feedings were given to measure up to the theoretical requirement, 174, or 68 per cent, of the infants regained their birth weight by the tenth day. These infants attained an average of nearly 3 ounces (85 Gm.) above their birth weight, a much better showing than that made by the group receiving feedings exclusively of breast milk (table 3).

The infants who made satisfactory gains either on the breast milk alone or with a complementary food containing 20 calories to each ounce were found to require from 43 to 53 calories per pound (table 5). A mixture of less caloric value would necessitate larger amounts and was likely to retard emptying of the breasts. The infant of average weight takes approximately 500 cc. (16 ounces) of milk by the time it is 1 week old (table 4).

It appears from this study that carefully controlled complemental feeding is advantageous in selected cases in which the breast milk is insufficient or absent, especially in the first three days of life. It is possible to minimize the early loss of weight and to promote early and regular gains. If the bottle feedings are not forced, are not given until the breasts are emptied, and are discontinued when sufficient breast milk appears to permit daily gains in weight or to measure up to the stomach capacity, there is apparently no adverse influence on the ultimate breast supply. In this group, 69, or 26.9 per cent, left the hospital entirely breast fed; 140, or 54.7 per cent, left on a diet of breast milk with complemental feedings, and 47, or 18.4 per cent, left the hospital entirely bottle fed (table 6). Complemental feedings, after being started, were withheld in 161 infants of this group for a varying length of time when the breast supply increased. When these infants were discharged from the hospital, 58, or 36 per cent, were entirely breast fed; 78, or 48.5 per cent, were breast and bottle fed, and 25, or 15.5 per cent, were entirely bottle fed.

TABLE 4.—*Amount of Milk Taken Daily During First Ten Days (Average of 63 Infants Above Weight on Tenth Day)*

Day	Average Intake of Milk in 24 Hours		Average Amount Each Feeding, Cc.	Physiologic Capacity of Stomach (Scammon and Doyle) Cc.
	Ounces	Cc.		
1	2.6	78	13	9
2	6.4	192	32	22
3	9.8	294	49	43
4	13.2	396	66	65
5	15.0	450	75	78
6	15.5	465	77	85
7	16.5	495	82	90
8	16.5	498	83	94
9	16.6	498	83	99
10	17.0	510	85	105

Of the remaining 95 infants in this group who received complemental feedings during their entire time in the hospital, on being discharged, 11, or 11.6 per cent, were entirely breast fed; 62, or 65.3 per cent, were breast and bottle fed, and 22, or 23.1 per cent, were entirely bottle fed.

Thus an effort to restrict bottle feedings increased the number of breast fed babies from 11.6 to 36 per cent.

Unrestricted Complemental Feedings.—The third group numbering about 100 infants were observed in the nurseries of two private hospitals. In this group no definite plan was followed. The infants were under the care of various staff physicians. It was almost a routine procedure to start bottle feedings on the second day, sometimes to complement the breast and often to supplant the breast nursing entirely once or twice daily. The majority received the bottle instead of the breast at the night feeding. For the most part, the babies received all they would take of a low caloric food con-

1. Scammon, R. E., and Doyle, L. O.: Observations on Capacity of Stomach in First Ten Days of Postnatal Life, Am. J. Dis. Child. **20**: 516 (Dec.) 1920.

sisting of milk or skimmed milk, water and sugar, or one of the powdered synthetic milks.

The figures for weight and intake of food in this group are of no value because of the fact that no definite plan was followed, a variety of milk mixtures was used, no particular effort was made to empty the breast thoroughly and the amount of complemental food taken depended entirely on the infant's appetite. Slightly less than 10 per cent of these left the hospital as breast-fed babies. Many of the charts on this group show that on the fourth and fifth day the breasts were yielding from 400 to 500 cc. daily, and on the ninth and tenth day this had decreased to from 300 to 400 cc. or less. It was apparent that the pushing of artificial food without regard to the quantity obtained from the breast results in a failure of the breast supply.

TABLE 5.—*Caloric Intake of Infants on Breast with Complemental Food Regaining Birth Weight on or Before Tenth Day of Life*

Weight, Pounds	Calories per Pound
5 to 6	53.3
6 to 7	50.3
7 to 8	47.0
8 to 9	45.8
9 to 10	43.0

COMMENT

To be of much value this study should show what became of the baby in the months following his leaving the hospital nursery. How long was he given breast feeding and with what result? We found it difficult to follow a large series of infants after their first two weeks. Whether they continue with the breast feeding depends a great deal on whom the mother encounters when she seeks advice about the infant's food. Those who are looking for feeding advice early and often are usually giving their infants artificial feedings very early. We attempted such a survey in our outpatient department, but this was of little value, because we observed those who were given bottle feedings principally and relatively few of those doing well on breast feedings.

The most common cause for instituting complemental feedings in the first week of life is a failure to gain. No doubt many infants need complemental food during this period, but failure to gain from day to day does not in itself make necessary the beginning of bottle feedings. A comparison of infants born in the City Hospital with those in private practice leads us to believe that many of the latter are started on bottle feeding without much real effort to keep them on breast feeding. There are several reasons for this fact. The advancement in knowledge of infant feeding during the past decade, the simple and easy methods of preparing infant foods, and the many excellent substitutes for breast milk make the physician prone to resort to artificial food, often too early. The danger of artificial feeding is no longer feared as it was several years ago. In fact, several comparisons that have been made between breast-fed infants and bottle-fed infants recently indicate that the bottle-fed infant does about as well as the breast-fed one.[2] However, for the general population that gets no experienced advice, artificial feeding is not as safe as the previous statement would indicate.

TABLE 6.—*Two Hundred and Fifty-Six Infants Receiving Complemental Feedings During First Ten Days*

Left Hospital	Number	Per Cent
Entirely breast fed	69	26.9
On breast and bottle	140	54.7
Entirely bottle fed	47	18.4

Is there any advantage in having a baby a few ounces heavier at the tenth day of life? We believe that it is better to have the baby leave the hospital with sufficient food to be contented and thriving, provided it can be done without endangering the breast supply. If a breast-fed infant goes home underweight and not getting sufficient milk, it will not be long before mixed feedings will be started and probably not as well as if the baby had left the hospital receiving carefully regulated complemental feedings.

SUMMARY

A comparison of the weight progress of breast-fed infants and those on carefully controlled complemental feedings shows that the latter usually regain their birth weight more rapidly than those exclusively breast fed.

Thirty-two per cent of breast-fed infants and 67 per cent of babies given breast milk with complemental feedings regain their birth weight on or before the tenth day of life.

When the amount of complemental food is carefully regulated by measuring the intake of breast milk and if it is not given when the breast supply becomes sufficient and never until the breast supply is exhausted, this practice apparently has no adverse influence on the ultimate breast flow. When complemental feedings are given freely or before the baby has emptied the breasts, the breast supply is endangered, and this results in early weaning.

The infants of average weight (7 pounds [3,175 Gm.]) in this group who made satisfactory gains received at the end of their first week of life approximately 500 cc. (16 ounces) of milk each day, or from about 47 to 50 calories per pound of body weight.

214 Medical Arts Building

ABSTRACT OF DISCUSSION

DR. EUGENE ROSAMOND, Memphis, Tenn.: In 1919, in preparing a paper on breast-fed babies who cry at night, I made a survey of several hundred grandmothers, lasting throughout the period of a year. I found that Grandmother always successfully nursed her baby. I found that Grandmother's babies were all hungry. They had three months of colic, which is hunger. But Grandmother had no specialist to consult, and she persisted in her efforts to nurse her baby. The combination of the hungry baby, the good milker, the persistent demand of nature for more food, finally successfully produced more food. The other side of the picture is also true. Babies learn quickly. Babies learn that some one will soon come with an easy flowing bottle, and there is no use to work so hard for a living. Complemental feeding demoralizes and makes lazy the nursing baby. Complemental feeding also demoralizes and makes lazy the nursing mother. Complemental feeding sooner or later is going to lead to the cessation of breast feeding. This might be heresy, but I would almost be tempted to say, Who cares? I don't believe there is a member of this section who doesn't feel that he can, more comfortably to the baby and to the mother, certainly to the father and himself, feed a baby on a bottle. The breast-fed baby is more apt to be hungry and uncomfortable. The milk supply and the milk content are affected by the emotions, and the vicissitudes of modern life make it hard for

2. Faber, Harold K., and Sutton, T. Leonard: A Statistical Comparison of Breast-Fed and Bottle-Fed Babies During the First Year with Special Reference to Gain in Weight and Morbidity, Am. J. Dis. Child. **40**: 1163 (Dec.) 1930. Glazier, Manuel M.: Comparing the Breast-Fed and the Bottle-Fed Infant, New England J. Med. **203**: 626 (Sept. 25) 1930.

the modern mother to emulate the placid cow. Every time she gets mad at her husband, every time she gets excited, every time she gets tired, the mother's milk supply is going to be cut down, and she is going to have a hungry baby.

DR. ROBERT A. STRONG, New Orleans: Since the pediatrician has been able to convince the obstetrician that the baby requires at least as much attention as the placenta, the opportunity for learning many things has been greatly improved. One of the things that have been taken up is what can be done to reduce the loss in weight that up to a few years ago was accepted as being physiologic. I think that most pediatricians have tackled this problem in their service for the new-born, and have been more or less successful. The figures presented by Drs. Dwyer and Neff demonstrate clearly that the problem is one of individual birth. It has occurred to me, since Dr. Weston has given such important information on the minimal content of food, that an additional phase of this problem might be to see just what results would be obtained in improving the breast milk by feeding the mother a food of high mineral content for at least two months before gestation. In any event, I think that this paper has shown that one should use a certain amount of discrimination in tackling these problems and not just simply give dextrose as a routine or some other food for the purpose of minimizing the initial loss of weight.

DR. MILTON SMITH LEWIS, Nashville, Tenn.: The daily health routine of the lactating mother needs more careful supervision and regulation by the physician, if he is to encourage maternal nursing. In many cases the success or failure of breast feeding depends on the care given the mother's breast. Both the baby and the mother have been through a strenuous ordeal and it is of utmost importance that both should be given proper rest after labor. Placing the baby to the breast too early and too often before milk is present in sufficient quantity often traumatizes the nipples so severely that they easily crack or become fissured, so by the time the milk really comes in the nipples are so painful that the baby cannot empty the breast properly; this discourages the milk flow from lack of proper stimulation. My usual routine is to place the baby to the breast every six hours after from twenty-four to forty-eight hours, depending on the condition of the mother and baby, for only five minutes. This stimulates the breast sufficiently and satisfies the mother's anxiety. As soon as the milk comes in, the baby is placed on the three or four hour schedule. The proper support of the breast during the engorgement stage may be accomplished by the DeBuys breast binder properly applied with the gland well pressed forward on the chest toward the median line and away from the axillary spaces. This will encourage natural drainage with the greatest possible comfort to the mother. In cases in which there is insufficient breast milk from the start, complemental feeding should be instituted as early as possible to prevent further loss of weight. In my experience it has been impossible to increase the quantity of breast milk by regulation of the mother's diet; but, as Dr. Rosamond has brought out, the nervous condition of the mother has often a striking influence on her milk secretion, and when this psychic influence is removed the milk secretion seems to improve and the baby benefits thereby.

DR. BÉLA SCHICK, New York: Having studied the same question for seven years, I came to a conclusion similar to that of the authors. If one gives the new-born child only fluid he looks better than if one leaves him alone, as a flower put in water keeps fresh for a while. But the child is starving and shows signs of starvation: acetone in the urine and in the air of expiration, no stools or stools of a meconium-like character continuing for many days (hunger stool). I studied, furthermore, how the child develops if additional breast milk or different mixtures of cow's milk are given. Breast milk alone or breast milk with the addition of mixtures of cow's milk gave the best results. There is a certain danger that by additional feeding the child becomes lazy and refuses to take the breast; but if the physician insists on continuing the breast feeding the breast feeding can almost always be sustained. We started to feed the child six hours after birth. The child did not get more during the first two or three days than his basal requirement. By forceful feeding one is able to do away almost entirely with the loss of weight which is so often encountered during the first days of life. We restricted the additional feeding to children below 5 pounds in weight. We left the very strong children without this supplementary feeding because these children are in no danger if they lose a little weight. In weaker children a vicious circle occurs. Not taking enough nourishment, they become still weaker and are then less able to nurse sufficiently at the breast.

DR. C. ULYSSES MOORE, Portland, Ore.: In the hospital in Portland we avoid having trouble with the nipple by treating them just as nature would, not by putting on any sort of ointment, which at first tends to moisten the tissues and makes infection still more easy than it otherwise would be. We cut two holes the size of a half dollar in the binder for the nipples to go through; this allows the air to get around the nipples and prevents the cloth from pressing down on them and making a moist place where bacteria can grow easily. In several years we have not had 0.1 per cent of infected nipples in mothers in the hospitals. I don't remember a case in several years. Breast expression, as has been brought out so well, I think can well be used. We have another thing to help breast expression. One should teach the baby to depend entirely on the breast for sustenance, even though he may receive milk from the bottle. So we use a number 8 or 10 catheter in the form of a combination breast feeder. Milk or whatever formula is desired is put into the bottle; this tube is put on and the bottle is held upside down; the tip of the little rubber tube is put in the baby's mouth while he is at breast, and the baby pulls at the breast and pulls at the bottle at the same time. That combination breast feeding enables the babies to receive any formula from the breast.

DR. F. J. SCHATZ, St. Cloud, Minn.: Speaking from the point of view of both an obstetrician and a pediatrician, I agree with Dr. Lewis in regard to the early nursing of babies. The child should not be put to the breast too soon, because of the danger of sore nipples. One may take whatever care one chooses prenatally, and one does not get results in all cases. Infants should not be put to the breast for the first twenty-hour hours after delivery; the average baby, if he is kept warm and is properly cared for, will sleep the greater part of the time, and all he requires is water. Water should be given freely. The reason for giving water freely is that many infants will not urinate for the first twenty-four to forty-eight hours unless one pushes fluid, which stimulates the action of the kidneys and dissolves the urates. The urine may be highly colored because of the urates that are present. Colic is not always due to lack of food. If one watches the napkins of the early days, one will find that they are stained not only from the urates but also sometimes from blood, indicating the presence of undissolved urates which cut as they pass through the ureters, producing colic. Some years ago I had the opportunity to present before the section of the Central states the case of a child who cried continuously after the first three weeks. When the child was about four months of age he had all the indications of a gastro-intestinal disturbance with kidney complication and passed five stones that were larger than the average pinhead; these were analyzed and shown to contain 90 per cent of ammonium urate. After the passage of the stones, the child no longer cried and made progress. The supply of milk depends on the mother. There are mothers with and without an ample supply. Regardless of what one does about foods, liquids or other treatments, the supply will sometimes remain insufficient. As to feeding, I start my complemental feeding after the first twenty-four hours. The baby is put to the breast before the complemental feeding is given. The average mother will not get her supply of milk for at least forty-eight hours. The baby is weighed before and after each nursing to determine whether he is getting sufficient. If he is not, the breast is expressed, and if there isn't an ample supply, the feeding is complemented.

DR. HUGH L. DWYER, Kansas City, Mo.: I said nothing about the importance of fissured nipples in the successful nursing of the infant. This condition is often brought about by the baby nursing at the empty breast. It does not matter much what is used on the nipple or how soon after delivery the baby is fed. In my experience, the time at the breast is the important factor. The baby may be started four, six or eight hours after delivery; but he should not remain there nursing at a breast that has nothing in it. About 40 per cent of the mothers in this group had enough milk on the second day to be of value. The theme

of this paper was whether or not one should start a bottle at all in the first week of life. We have come to the conclusion that it should not be started in about two thirds of all babies. The way to find out when the bottle should be started is to weigh the baby before and after nursing. The baby that is doing well gets from the breast about a pint of milk at the end of its first week. If the bottle is started before this time it should be discontinued when the breast milk comes in. In this way one can improve the baby's nutrition in its first week of life without endangering the breast supply.

Clinical Notes, Suggestions and New Instruments

ABDOMINOSCROTAL HYDROCELE

CHARLES S. CURTIS, M.D., ST. ANTHONY, NEWFOUNDLAND

A man, aged 19, about two years previously received a kick on the scrotum which had become swollen and had remained swollen but had not increased in size. There was never much pain. The patient had dysuria for one night following the accident; micturition was otherwise normal. He never noticed any swelling in the abdomen. There was no cough.

Examination revealed a smooth firm mass in the middle of the lower part of the abdomen, reaching almost to the umbilicus and resembling a dilated bladder in all except tension, being rather softer than a bladder. The right scrotal sac and the inguinal canal were occupied by a semireducible, semitranslucent swelling with a definite impulse on coughing. No testicle could be felt on this side of the scrotum or canal. The left scrotal sac had a normal testicle.

Specimen removed at operation, consisting of sac of abdominoscrotal hydrocele.

Rectal examination was negative.

On catheterization an ounce of residual urine was obtained and the abdominal tumor remained as before.

Under ether, an exploratory laparotomy was done with excision of the cyst of the testicle.

The abdomen was opened in the midline and a tense tumor about the size of a grapefruit was felt in the midline, which seemed to be attached to the pelvic wall; there were a few glands along the iliac arteries. The tumor could not be removed through this wound. The abdomen was closed in layers without drainage.

Another incision was made through the right external ring, exposing the testicle and sac. A trocar was inserted into the sac, and several ounces of straw colored fluid was obtained, and the tumor in the abdomen disappeared. A finger was then inserted into the enlarged opening, and the beginning of a huge hydrocele was found, probably congenital, which had pushed up through the internal ring into the abdominal cavity. By blunt dissection this sac was gradually excised in the usual manner. This sac, together with the testicle, was removed in the usual manner with a great deal of bleeding. The wound was closed in layers without drainage.

Seven days later the stitches were removed. The wound had healed well. There were no complications.

TRAUMATIC RUPTURE OF LEFT RENAL ARTERY WITHOUT INJURY TO KIDNEY

P. K. EDMUNDS, M.D., LOS ANGELES

The finding of a ruptured left renal artery following trauma and without grossly demonstrable kidney damage or hematuria is rare. This is particularly true in the absence of predisposing changes in either the kidney or the vessels, or where no abnormal mobility of the kidney could be demonstrated.

In a review of the literature, relatively few cases of rupture of renal vessels are reported and very few cases of traumatic rupture in a vessel otherwise apparently normal. Lincoln[1] reports fifteen cases prior to 1918 of spontaneous rupture of renal vessels (arteries), fourteen collected from the literature and one his own case. Two of the patients were children, one was a young adult, and the remainder were elderly people in whom could be demonstrated predisposing pathologic changes in the vessels, for the most part of arteriosclerotic and syphilitic nature. Hematuria was present in four cases and was profuse in three. Greenwood[2] reports a case occurring in a boy, aged 14, who was thrown against a tree while sleighing, striking his left lower anterolateral chest wall and flank. It is interesting to note that in this case there was little or no evidence of shock until fifteen hours later. At this time there was rigidity of the entire upper abdomen, with tenderness in the left upper quadrant. A preoperative diagnosis of ruptured spleen was made. Exploratory operation revealed a few subcapsular hemorrhages in the left kidney, and the left renal artery was torn completely across at the hilus. Thrombosis had occurred, arresting the hemorrhage. The patient recovered. In Atkinson's[3] case the kidney was hydronephrotic and the vessels much smaller than normal. The patient was a youth, aged 18, who fell while playing cricket and pushed his elbow into his left side. Pain was slight and the patient continued playing. Next day the left side was stiff and painful and there was gross hematuria. The left abdomen and flank were found to be rigid and tender. At operation there was found hydronephrosis of the left kidney, and the (small) renal vessels were torn. Hemorrhage had ceased spontaneously by thrombosis within the vessel walls. Berhouet[4] in 1926 reported a case of partial tear in the left renal artery from severe traumatism of the left hypochondrium. Beach,[5] in reporting ten cases of traumatic rupture of the kidney, refers to tears in the renal pedicle as being rare and refers to the work of Dr. McDonnell, Sacramento County physician, who in fifteen years had observed at autopsy only ten cases presenting torn pedicles, all with other grave concomitant lesions, such as ruptured liver or spleen. In each case, death had occurred within a brief interval following the injury. In none of the ten cases reported by Dr. Beach was there any tear of renal vessels, although in one case a neighboring mesenteric vessel had ruptured. The case reported here was considered of unusual interest and singularity, particularly because of the absence of preexisting disease of the vessels or abnormal mobility of the kidney.

REPORT OF CASE

History.—C. S., a white man, aged 45, married, a carpenter, was brought to the Golden State Hospital by ambulance, Dec. 21, 1931, after falling from a scaffold about 25 feet from the ground. He was unconscious for a brief interval, during which time he was given first aid by a near-by physician and within two hours was admitted to the hospital. On admission he was found to be in extreme shock; the pulse was rapid and thready, the skin surface pale, moist and cold. The body temperature was subnormal and the blood pressure reading was 95 systolic and 75 diastolic. There were superficial abrasions over the left side of the face and scalp, and discoloration about the left eye. The patient complained of pain in the left upper abdominal region, and on palpation acute tenderness was elicited over

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2. Greenwood, A. H.: Severe Renal Trauma with Rupture of Renal Artery; Absence of Hematuria, Canad. M. A. J. **16**: 1500 (Dec.) 1926.
3. Atkinson, E. M.: Rupture of Renal Artery and Vein by Slight Injury: Operation and Recovery, Brit. M. J. **1**: 324-325 (Feb. 24) 1923.
4. Berhouet, A.: Serious Traumatism of Left Hypochondrium with Partial Tear of Renal Artery, Ann. de Fac. de méd. Montevideo **11**: 387-394 (June) 1926.
5. Beach, E. W.: Traumatic Rupture of Kidney: Ten Cases, California & West. Med. **33**: 494-502 (July) 1930.

this area and to a lesser degree, though still quite moderate, over the course of the descending colon and in the left flank. Mild rigidity of the left rectus muscle was suggested at the time and became definitely demonstrable within the course of an hour or two. During this time measures against shock were instituted pending surgical consultation and laboratory study. Examination of the urine revealed a trace of albumin and several hyaline casts but was otherwise negative. The blood count revealed a hemoglobin reading of 80 per cent; the red cell count was 3,980,000 per cubic millimeter, the white cell count 29,960. A differential count gave 10 per cent lymphocytes, 86 per cent polymorphonuclears and the remaining 4 per cent monocytes and transitional cells. Blood study repeated an hour later showed no appreciable change.

Operation.—An exploratory operation was considered indicated and a left rectus incision in the upper part of the abdomen was made under gas-ether combined anesthesia and the abdominal cavity was explored. The spleen was found ruptured transversely: the upper pole lay free in the abdomen, the lower pole was split into two segments but remained attached to the pedicle. There was a large amount of blood in the abdominal cavity, and in addition there was a subserous hemorrhagic extravasation over almost the entire extent of the descending colon. This was thought to have had its origin from the splenic area and to have gravitated downward behind the peritoneal covering of the bowel. There was a small rent about 1½ inches long in the serosa at about the midpoint of the descending colon. No further pathologic changes were found. The spleen was removed and its pedicle securely ligated. Most of the blood was sponged out of the abdomen and the incision closed without drainage.

Postoperative Course and Treatment.—During the operation the patient's condition was very poor and for a while he was almost pulseless. Venoclysis and stimulants were given during the operation and afterward, and subsequently up to the time of the patient's death. A 2.5 per cent dextrose solution in physiologic solution of sodium chloride was used and supplemented by fluids by hypodermoclysis. Occasionally an ampule of epinephrine hydrochloride was added to the solution when the blood pressure was very low. The postoperative course was stormy. On the eve of the first day the pulse was scarcely perceptible and the blood pressure reading could not be accurately determined. An occasional sound was heard at 75 mm. Following venoclysis with dextrose solution to which epinephrine was added, the pulse improved and the pressure reading was taken at 90 systolic and 60 diastolic. Solution of pituitary was given with the object in view of supporting the circulation and of helping to relieve ileus, which became pronounced soon after operation and continued so despite all measures to overcome it. The patient belched frequently and was restless most of the time. His respirations were hurried, short and associated with an expiratory grunt. The lungs, however, remained clear. The day after operation, his condition seemed improved generally: His blood pressure rose to 120 systolic and 80 diastolic, and the pulse was of fairly good quality, though rapid. Locally, abdominal distention persisted despite enemas, gastric lavage and stupes. The patient took fluids by mouth quite freely. The temperature was moderately elevated and remittent throughout. The patient was frequently stuporous but rational for the most part, and there were no neurologic observations definitely indicating intracranial involvement. Despite an apparently definite tendency to improve which the patient demonstrated on the second and third days after operation, he suddenly and rapidly lost ground on the fourth morning and died within an hour.

Autopsy.—The following is an excerpt from the coroner's report: "The abdomen contained a small amount of free blood. The spleen was missing, apparently by reason of surgical removal, and the operative site and ligatures were found to be in excellent condition. There was moderate roughening of the peritoneum covering the intestines, slight recent adhesions in places and localized streaks of reddening of the peritoneum. The left renal artery was found to be partly torn across near the aorta with the formation of a large retroperitoneal hematoma. The artery was thrombosed with consequent arrest of hemorrhage." The cause of death was given as shock and exhaustion following traumatic rupture of the spleen with splenectomy. There was no evidence of injury to the kidney substance.

COMMENT

The mechanism by which an otherwise normal-appearing renal artery attached to a normally anchored kidney (which was grossly uninjured) might be torn by trauma is worthy of speculation. This is made more enigmatic when it is recalled that the urine contained no red cells grossly or microscopically demonstrable. The force of impact must have been considerable in a fall of 25 feet, and this is borne out by the finding of a shattered spleen. From external appearances it would seem that the patient landed on his left side, probably in a left anterolateral and horizontal plane, since there was no evidence of fracture of any bones, and the neurologic examination was essentially negative. I believe that the patient died as a result of delayed and prolonged shock and exhaustion and not from hemorrhage or as a result of the added shock of operative intervention, since at autopsy it was found that the operative site was in good condition and that the torn renal vessel was thrombosed, with resultant arrest of hemorrhage. Moreover, there was no evidence of infection or leakage of urine in the retroperitoneal region. It is interesting to note that in all other cases of rupture of the renal vessels here reviewed, thrombosis had occurred with arrest of bleeding. Doubtless the extremely low blood pressure noted at times in this case was nature's protective mechanism in aiding thrombosis in the injured vessels. One wonders if it wouldn't be wise in such cases to curb one's eagerness to bring the blood pressure back to a normal level so soon after severe trauma if there is suspicion of a ruptured vessel. In certain cases such efforts may militate against nature's mechanism. On the other hand, where operative intervention is considered, an attempt should be made to counteract shock preoperatively as well as after operation, and that was done in this case. Even had the patient survived the injury, subsequent changes in the left kidney—cut off from its blood supply—would have made a later operation necessary.

423 Towne Avenue.

SENSITIVENESS TO CORN SHUCK

W. W. DUKE, M.D., KANSAS CITY, MO.

The following case is interesting in showing high grade sensitiveness to the shuck, silk and dust from corn in the absence of sensitiveness to the pollen, the grain or corn smut:

A youth, aged 20, had had summer hay fever and asthma for several years. The hay fever symptoms were mild, however, as compared with the asthmatic symptoms. The history disclosed the fact that the symptoms came on while he was occupied in the care of cattle and were found on observation to occur about an hour after the handling or shucking of corn or after exposure to corn dust.

The patient was tested with several hundred materials and gave negative reactions to all of them including corn and other cereal proteins; also negative reactions to corn pollen and other pollens and to several of the fungi and spores including corn smut. He gave intensely positive tests, however, to extracts made from the shuck of corn, from corn silk, and from the dust scraped up from corn bins. Each extract gave intensely positive scratch tests even when used in high dilution. The patient was insensitive to acetone extracts filtered through stone but reacted positively to invisible particles in unfiltered clear extracts.

The patient was treated with an extract made by extracting dry corn shuck, 1:10 suspension, in glycerin and Coca's solution. Subcutaneous injection of 0.2 cc. of a 1:100 dilution of this mixture gave rise both to a large local reaction and to definite symptoms of hay fever and asthma. Treatment with ascending doses of the extract carried out over a period of three months gave rise to such tolerance that scratch tests with the strongest extracts were practically negative and exposure to corn dust in his occupation of feeding cattle had little ill effect unless exposed to excessive amounts while shucking corn.

This case is analogous to a timothy case reported by Cooke in that his patient was sensitive to an extract of timothy hay but did not react to timothy pollen.

SUMMARY

A patient who had coryza and asthma on contact with dust from corn cribs was found sensitive to extracts of the shuck, silk and dust from corn but was not sensitive to the pollen or grain or to the fungus corn smut.

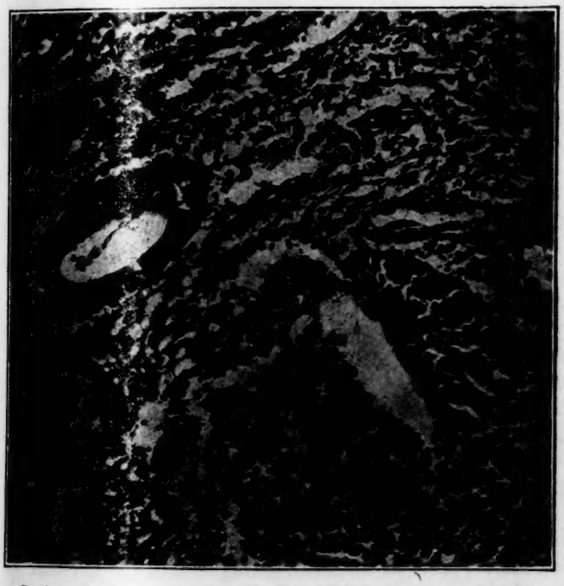
Relief was obtained by specific therapy combined with partial avoidance of corn dust.

820 Professional Building.

ENDOMETRIOMA OCCURRING IN A POSTCESAREAN LAPAROTOMY SCAR

WILLIAM F. MENGERT, M.D., IOWA CITY

The occurrence of endometriomas in laparotomy scars, especially those following cesarean section, is sufficiently rare to warrant reporting. There have been a number of good reviews of the literature by Nicholson,[1] Heaney,[2] Lemon and Mahle,[3] Vassmer,[4] Pratt,[5] and more recently Hosoi and Meeker,[6] which indicate that there are less than a hundred such reports available. Hosoi and Meeker,[6] who have collected eighty-seven cases of endometriomas occurring in laparotomy scars, report only twenty-one in which the pregnant uterus had been opened. It is interesting that cesarean section plays such a relatively small antecedent rôle in the formation of these tumors. Possibly the decidua is not adapted for independent growth immediately after parturition, when all pelvic structures are undergoing involution.



Section of tumor mass removed from laparotomy scar; × 400.

REPORT OF CASE

History.—A white woman, aged 31, a secundigravida, reentered the obstetric and gynecologic service of the University Hospital, March 18, 1930, complaining of a lump in an old laparotomy scar. Six years before admission, cesarean section through a right rectus incision had been done elsewhere because of a congenital dislocation of the right hip. One year later a second cesarean section was done in our service through a midline incision. Convalescence from each of the operations was uneventful.

Present Illness.—About three years after the first intervention and three years before the present admission, a small lump, which slowly increased in size, was noticed at the upper angle of the right rectus scar. The tumor recently varied from the size of a hazel-nut in the intermenstrual period to the size of a walnut at the catamenia. Although pain was a constant feature, it was minimal during the intermenstruum and acquired annoying proportions only at the menses.

Examination.—There was a spherical mass about 2.5 cm. in diameter at the upper end of the old right rectus scar, and the overlying skin had a slight reddish-blue tinge.

Operation.—The mass was found to be adherent to the superficial surface of the fascia and was easily removed by blunt dissection. There was no connection with the pelvic structures.

Pathologic Examination.—Gross: The cut surface of the tumor showed small hemorrhagic cystic areas separated by numerous small white strands of tissue. Microscopic: In a mass of connective tissue and fat there were several cavities filled with red blood cells and lined by epithelium resembling endometrium. In several instances there were normal appearing endometrial glands with typical supporting stroma.

From the Department of Obstetrics and Gynecology, State University of Iowa College of Medicine.

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Special Article

VITAMIN E

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[EDITORIAL NOTE.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

One of the most remarkable results of nutrition researches in the last decade has been the demonstration that laboratory animals (rats, mice) can be successfully reared on simplified dietary mixtures consisting of protein, fat, carbohydrate, salts and the vitamins hitherto known and that, although healthy adulthood is reached, sooner or later such animals lack entirely the power of reproduction; i. e., sterility supervenes.

DISCOVERY OF VITAMIN E AND ITS CONFIRMATION

In 1921, having been previously concerned with the precise mechanism of the estrous cycle in the rat, Evans and Bishop[1] began to study dietary influence on the ovulatory rhythm and on the various steps in the physiology of reproduction. To their surprise they found that on supposedly complete dietaries, and with both growth and external appearance normal, animals would also exhibit normal estrous cycles and would breed, ovulate and conceive, yet be unable to experience a normal gestation through the invariable occurrence of fetal death. Elevation in the proportion of each of the constituents of the diet and especially great increase in the amounts of vitamins A, B and D[2] was without effect, yet various natural foods proved curative in the next following gestation. Since the fresh leaves of lettuce were

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The researches here summarized have now engaged the attention of students of the subject at such widely distant points that they may be said to have been adequately confirmed and extended. The writer is indebted to the work of collaborators—to Katherine Bishop, George O. Burr, Theodore Althausen, Marianne Goettsch and others, and acknowledges specially the aid given the present compilation by Samuel Lepkovsky, Elizabeth Murphy and Robert E. Cornish.

1. Evans, H. M., and Bishop, Katherine S.: On the Relations Between Fertility and Nutrition: II. The Ovulation Rhythm in the Rat on Inadequate Nutritional Régimes, J. Metabol. Research **1**: 319 (Feb.) 1922; 335 (March) 1922.
2. The rat does not need vitamin C.

potent, it appeared at first as if the antiscorbutic vitamin C, not known to be needed by the rat, could possibly be implicated; but the speedy accomplishment of similar "cures" with dry cereals, e. g., whole wheat, notably deficient in C, pointed clearly to the detection of the need for a new substance, and since in the case of some food materials (e. g., wheat germ) the requisite quantity was small and extracts of those foods were efficacious, the discoverers [3] felt justified in announcing the existence of a new, fifth, member of the vitamin class, to which the designation X provisionally and later E was attached. The intervention of such a vitamin in the physiology of the test animals (rats, mice) has been abundantly proved, but the extent of need for this on the part of other species is still a subject for investigation.

It is interesting that while experimenting with other food mixtures and engaged in other aims, essentially the same conclusion and interpretation was quickly reached by Barnett Sure [4] and by H. A. Mattill,[5] and the work of these investigators appeared so promptly that they must almost be reckoned with the original finders as promulgating the new conception and securing for it at once favorable attention. Confirmations of the need for the vitamin in the male by Karl Mason [6] and in the sexual physiology of the mouse by H. H. Beard,[7] both from Mendel's laboratory, were of great importance in the early history of this study. Critics at first hostile to the postulation of a fertility or antisterility vitamin have now entirely acceded to the interpretation [8] and in the last few years twenty or more researches have extended this verification, among which may be mentioned those of Hogan and Harshaw,[9] Daniels and Hutton,[10] Kennedy,[11] Suzuki,[12] Tso,[13] Verzár [14] and Juhász-Schäffer,[15] as well as of Sure, Mattill and Mason.

IMPORTANCE OF METHODS OF STUDY OF THE PHYSIOLOGY OF REPRODUCTION

Little information of value is gained by merely placing the sexes together and observing that animals do not beget young when held on certain diets. The study of upset in the female reproductive mechanism due to diet cannot be analyzed satisfactorily except by the employment of males of proved fertility and the careful observation of the female to ascertain:

1. The occurrence of estrus by means of vaginal smears.
2. The occurrence of copulation, by the finding of the bouchon-vaginale or male's plug in the vagina or of residual sperm in the vaginal contents.
3. The normal course of early pregnancy, i. e., the cessation of estrous cycles as determined by daily study of the vaginal smear, up to and including implantation as detected by the erythrocyte sign.
4. The course of later pregnancy either (*a*) normal or involving (*b*) resorption of the young (characteristic for sterility due to inadequate E) or (*c*) impairment of the birth mechanism (characteristic, for example, for some stages of sterility due to inadequate vitamin A).

Resorption is best detected by isolation of the female and the institution of daily weighings for at least five days, from days 20 to 25, and the finding of a more gradual decline in the mother's weight than is found in the precipitous drop at parturition.

One must, furthermore, after detection of one or more typical resorption gestations, prove that the reproductive mechanism is perfect when E is now conveyed to the mother.

Normal young females begin life with their tissues already possessing certain amounts of vitamin E, which was conveyed to them in intra-uterine life by their mothers; this is readily ascertained by killing such young and feeding them to E sterile mothers. If, now, such animals are reared on a regimen deficient but not wholly free of vitamin E, they are able to accumulate further traces of E in their tissues and for that reason may be able, if bred early in life (sixtieth day), to cast one or more normal litters. We have called this phenomenon "initial fertility." It is unfortunate that it may regularly occur with diets which are nevertheless so deficient in E that the second or third gestation is a sterile one. The phenomenon has doubtless led some investigators to challenge the existence of E, and it alone, besides the loss of time, would furnish ample reason for the adoption of the "curative" rather than the "prophylactic" method of determining whether any food is rich or poor in vitamin E. The phenomenon of initial fertility may always be circumvented when a diet is really freed of contaminating traces of E either by (1) rigorous extraction of the dietary constituents by alcohol and ether or other solvents of E but more conveniently by (2) the use of a slightly rancid fat—the rancid substances acting in a remarkable way to catalyze oxidative destruction of whatever E may be present (discussed later in the section on vitamin E and naturally occurring antioxygens).

The accidental employment of slightly rancid lard undoubtedly aided the original discovery of sterility due to lack of vitamin E, and the final recognition of its manner of action cleared up an important chapter in the controversy over the existence of E, since some investigators (as Nelson), pointing clearly to the increased sterility when more lard was employed, at first adopted the seemingly preferable hypothesis of direct injury by the fat per se.

CHARACTERISTICS OF STERILITY DUE TO DEFICIENCY IN VITAMIN E

One of the most striking aspects of the sterility of animals due to lack of fat-soluble E is the differing effect of this lack on the two sexes: in the male, the germinal cells, i. e., the seminiferous epithelial cells degenerate completely; in the female, no degeneration of ova can be demonstrated—indeed, it would appear

3. Evans, H. M.: On the Existence of a Hitherto Unrecognized Dietary Factor Essential for Reproduction, Science **56:** 650, 1922.
4. Sure, Barnett: Dietary Requirements for Reproduction: II. The Existence of a Specific Vitamin for Reproduction, J. Biol. Chem. **58:** 693 (Jan.) 1924.
5. Mattill, H. A., and Stone, N. C.: The Nutritive Properties of Milk with Special Reference to Reproduction in the Albino Rat, J. Biol. Chem. **55:** 443 (March) 1923.
6. Mason, K. E.: Testicular Degeneration in Albino Rats Fed a Purified Food Ration, J. Exper. Zool. **45:** 159, 1926.
7. Beard, H. H.: Studies in the Nutrition of the White Mouse: The Relation Between Diet and Reproduction, Am. J. Physiol. **75:** 682 (Feb.) 1926.
8. Nelson, V. E.; Jones, R. L.; Adams, G., and Anderegg, L. T.: Cod Liver Oil as Food-Observation on Existence of Vitamin E, Indust. & Engin. Chem. **19:** 840 (July) 1927.
9. Hogan, A. G., and Harshaw, H. M.: Some Relations Between Fertility and the Composition of the Diet, Missouri Agric. Exper. Stat. Res. Bull. **94,** 1926
10. Daniels, Amy L., and Hutton, Mary K.: The Fertility of the White Rat on Purified Rations, Proc. Soc. Exper. Biol. & Med. **23:** 225, 1925.
11. Kennedy, W. P.: Reproduction and Diet in the Rat, Quart. J. Exper. Physiol. **16:** 281 (Aug.) 1926.
12. Suzuki, Umetaro; Nakahara, Waro, and Hashimoto, Nabetaro: Reproductive Failure of White Rats in Synthetic Diets, Scient. papers Inst. Chem. Res. (Tokyo) **7:** 143, 1927; Proc. Imperial Acad. (Japan) **3:** 619, 1927; Sterility of White Rats Maintained on Certain Synthetic Diets, Japan M. World **8:** 31 (Feb.) 1928.
13. Tso, Ernest: Effects of Synthetic Diets on Fertility and Lactation, Proc. Soc. Exper. Biol. & Med. **24:** 465 (March) 1927.
14. Verzár, F.: Die Wirkung von E Vitamin auf die Hypertrophie des Uterus, Arch. f. d. ges. Physiol. **227:** 499, 1931.
15. Juhász-Schäffer, A.: Arbeiten über das E-Vitamin: I. Veranderingen der Keimdrüsen Während der E-Avitaminose, Virchows Arch. f. path. Anat. **281:** 3 (June 23) 1931; II. Wirkung des E Vitamins auf Explantate in vitro, p. 35; III. Versuche über die Frage der "Ex non won," p. 46; IV. Untersuchungen über den Vitaminingehalt der Faeces, p. 53.

that a deleterious influence of the lack of the vitamin is not shown by the ova or other ovarian tissue, but only by the developing embryo.

Female.—Striking proof that the early phases of the reproductive process do not need vitamin E is afforded by the resuscitation and in fact the complete normality of young in gestations when the curative dose of E is not administered until a few hours before implantation of the blastodermic vesicles—an administration as late as the completion of the fifth day after copulation. The vesicles are attached to the uterine mucosa some time early in the sixth day. Althausen,[16] who has made a careful examination of both embryo and placenta at all stages of E-low gestations, was in fact unable to discover stigmas of abnormality until the eighth day. It is also a matter of extreme interest that if a sufficiently high curative dose of E is administered on the fifth day, a single administration is adequate, doubtless because of the storage[17] of E in various depots (musculature, fat). This has turned out to be very convenient for the biologic chemist who, in his efforts to concentrate and to isolate the pure vitamin, must be concerned with infinitesimally small amounts,[18] difficult to subdivide in daily doses, and there is a further boon conferred by the efficacy of the single administration—for unless daily dosage is always with fresh material, the tendency to degeneration of E when mixed with any diluent and exposed to the air can hardly be avoided. Though the fetal rather than the maternal tissue in the placenta shows elective disorder when E is low or absent, there are indications that the maternal mechanism is abnormal in a strange tendency of the uterus in such females to form spontaneous nodular deciduomas[19] when pseudopregnancy is provoked by copulation with a vasectomized male.[19a]

Male.—The production of sterility in the male usually occurs at a later date than in his littermate sisters, but when it is once detected it is extremely difficult to cure—for even if immediately thereafter a dietary regimen high in E is instituted, few more than a fourth of the animals can be restored to fertility—the other three fourths suffering continued loss of the tubular epithelium and irreparable loss of vitality of the basal spermatogonia themselves—until only diminutive tubules devoid of all cells save Sertoli elements finally remain. The occurrence and progress of male sterility is, of course, established by following the results of copulations with females of proved fertility; but it is interesting that it can be predicted by the finding of highly characteristic parallel "sheaves" or clumps of immotile spermatozoa in the fresh ejaculate. The E-free sterility of males is invariably prevented even if cured with difficulty by the inclusion of a small amount of E in the "pure" diet on which such animals are reared. For the insurance of fertility throughout life, the requisite daily inflow of E exceeds that required for the embryos in gestation; the seminiferous epithelium, then, in proportion to its mass, has higher requirements for E, a fact difficult to correlate merely with the rate of cell division or protoplasmic growth, which is certainly greater in the embryos. More than ordinary interest attaches to the fact that, although sterile, E-free males, even in cases in which the testicular epithelium has already largely disappeared, for a long time continue, as do cryptorchid animals, to evidence normal sex interest and power to copulate; in consonance with this is their possession of normal accessory organs of reproduction, i. e., normal seminal vesicles, prostate and coagulating glands. These observations lend powerful support to the view that the male sex hormone (i. e., that governing behavior and the assumption of the secondary characteristics of sex) is not secreted by the actual germ cells of the tubules but by other elements of the testis.[20] The only remaining elements are the Sertoli cells of the tubules and the intertubular, so-called interstitial or Leydig elements, and Kudrjaschov[21] believes that he has produced evidence that the Sertoli cells must elaborate the male sex hormone. Finally, in the male there supervenes a complete lack of all sex interest and degeneration of the accessory organs.

16. Althausen, Theodore, cited by Evans and Burr (footnote 56).
17. Storage will be discussed later.
18. R. E. Cornish has in fact effected sterility cures in E-free females with the single administration of as little as 1 mg. of a chemical fraction out of wheat germ oil, as discussed later.
19. The deciduomas betray their presence by early hemorrhage into the uterine lumen and the consequent detection of blood in the vaginal smear, usually on the ninth or tenth day—some three or four days before the "placental sign" of a normal gestation.
19a. Evans, H. M.: Spontaneous Deciduomata in Pseudopregnancy with Low Vitamin E, Am. J. Physiol. **85**: 149 (May) 1928.

COMPARISON WITH REPRODUCTIVE IMPAIRMENT DUE TO DEFICIENCY IN OTHER VITAMINS

The sterility due to inadequate amounts of the antisterility vitamin, fat-soluble E, should not be confused with other dietary sterilities, for though much remains to be known of them it can already be said that other types of sterility almost never give the characteristic picture for male and female which has been described as due to low E. The study of other dietary sterilities has not been neglected, as the work of Evans[22] as well as that of Mason[6] and others included them in its scope, but a sufficiently careful analysis of them is still in its incipience.

1. *Comparison with Inadequate A.*—It is due more particularly to Sherman and his students that the discovery has been made that inadequate vitamin A always leads to impairment of reproduction although conferring for a time approximately normal growth and health.

So definite, in fact, is the relation of adequate A to normal reproduction that Sherman[23] challenges the appropriateness of designating vitamin E as *the* fertility vitamin. Yet in the case of the impairment of reproduction due to low A, no particular feature or phase of the process can be or as yet has been picked out as peculiarly deficient as is the case with E. With graver lack of A, Evans and his collaborators[24] have shown that a characteristic change occurs in the cells of the vaginal smear which are now only cornified elements and that this sign is found in no other type of dietary deficiency. If gestation ensues, animals suffering from low A, while occasionally exhibiting resorptions,[25] usually carry their young to term or slightly

20. In harmony with this is the effect of the gonad-stimulating hormone of the anterior hypophysis on males, in which increase of sex interest and potentia and hypertrophy of the accessories occurs, though only if the testis is present but in which little demonstrable change in the seminiferous epithelium takes place.
21. B. A. Kudrjaschov (Das Vitamin E und die Produktion des Testicularhormones, Endokrinologie **7**: 91 [July] 1930) feels that in the final stages of such male sterility the loss of sex interest and potentia is correlated not only with atrophy of the accessory organs but also with coincident atrophic changes detectable in the Sertoli cells and that a similar correlation with the Leydig cells cannot be made.
22. Evans, H. M.: Effects of Inadequate Vitamin A on Sexual Physiology of Females, J. Biol. Chem. **77**: 651 (May) 1928; Effect of Inadequate Vitamin B on Sexual Physiology in Male, J. Nutrition **1**: 1 (Sept.) 1928. Mattill, H. A.: Relations of Vitamins B and E to Fertility in the Male Rat, Am. J. Physiol. **79**: 305 (Jan.) 1927.
23. Sherman, H. C., and Smith, S. L.: The Vitamins, New York, Chemical Catalog Company, Inc., 1931.
24. Evans, H. M.: On an Invariable and Characteristic Disturbance of the Reproductive Function in Animals Reared on a Diet Poor in Fat-Soluble Vitamin A, Anat. Rec. **23**: 17, 1922.
25. Not usually, however, as Barnett Sure asserts (Dietary Requirements for Fertility and Lactation: I. A Dietary Sterility Associated with Vitamin A Deficiency, J. Agric. Research **37**: 87, 1928).

beyond, exhibiting an obscure impairment of the birth mechanism which ordains fetal death. Again, it is characteristic of other phases of impoverishment in A, for rhythmic estrus to be shown which is obscured by the continuous cornified smear but evidenced by the recurrence of copulation. Even though conception does not occur, the estrous cycle is not appreciably lengthened, so there is obscure involvement of that endocrine mechanism which establishes pseudopregnancy after infertile copulation. Inadequate A in the male leads, as is the case with low E, to testicular degeneration, as Mason [26] and Evans [27] have shown; yet, as Mason pointed out, a characteristic difference even here can be demonstrated in the fact that injury to the seminiferous epithelium from low A is not irrevocable as in low E, for dietary "cures" with high A lead fortunately in a high percentage of cases to regeneration and complete reinstatement of the tubular epithelium.

2. *Comparison with Sterility Due to Inadequate Vitamin B.*—Evans and Bishop,[1] Parkes [28] and others have shown that inadequate B causes a characteristic cessation of estrous cycles in the female, so that copulation cannot occur; nor is there evidence of normal growth and ripening of the ovarian follicles. Consequently, in these cases even the necessary initial steps in reproduction are repressed. The male also shows complete repression of sex interest, but the testis, unlike the case with A and E, is not selectively hurt; Parkes [28] suggested that low B probably acts primarily to injure the hypophysis, since the administration of the hormone of this gland will awaken sex interest even in ill animals and although Marrian and Parkes [28a] were unable to show impairment of such hypophyses, Evans and Simpson [29] showed that such glands are actually lacking in the gonad-stimulating hormone.

EVIDENCE OF THE STORAGE OF VITAMIN E AND ITS WASTAGE IN NORMAL METABOLIC PROCESSES

Proof of the storage of the antisterility vitamin is given by the direct detection of the vitamin in the tissues of healthy animals (chiefly fat and musculature) by feeding such tissues to, and thus curing, females of proved sterility. The feeding of similar tissues from animals reared without E can never invoke such cures. That storage occurs is further indicated by the survival of fertility in females given appreciable amounts of E and then shifted to an E-free regimen; the length of survival of fertility is strikingly correlated with the richness of E in the initial regimen. Animals reared on natural food diets, which possesses entirely adequate though not abnormally high E, can thus suffer the complete cessation of E inflow and yet maintain fertility for some four or more litters, a significant fraction of their normal life span. It is interesting that the wastage [30] of E occurs in normal metabolic processes and not through the special use of E by the fetus, for when animals are not submitted to the drain of repeated pregnancies their store of vitamin E is not conserved thereby, for it does not persist longer than it does in their frequently bred sisters.

EFFECTS OTHER THAN STERILITY PRODUCED BY INADEQUATE E

It will probably be ultimately demonstrated that all vitamin deficiencies lead to "constitutional" mal-effects which are widespread, that in disorders such as beriberi, scurvy and even rickets the structural and functional disturbances produced cannot be confined to a single mechanism or a single tissue. Nevertheless, it was a surprise to discover [31] the existence of a peculiar nervous impairment and paralysis in a high percentage of the suckling young born from mothers which had been supplied barely enough vitamin E to complete gestation successfully. The disorder was prevented by feeding high E to a mother throughout her lactation; by increase in no other vitamin or dietary constituent could such prophylaxis be effected. Our [31] experience was extensive and it would appear also to establish irrefutably the secretion of vitamin E by the mammary gland.

It became evident that lack of vitamin E affected the body deleteriously in a more general way than merely by injury to the reproductive system as soon as large numbers of animals were reared and held on E-free diets until well past the first year of life. Such animals invariably present a poorer appearance than do their littermates reared and held on an identical regimen save for the inclusion of small amounts of vitamin E (wheat germ oil) in the diet. The condition of the hair of such animals indicates lack of normal health; they frequently show muscular atrophy and above all their weight is always conspicuously less than that of their E-fed controls; it is evident that whereas the early phases of body growth are not impaired by lack of E, late growth phases are so impaired.[32] The view is tenable but hardly probable that early growth can go on because of the initial stores of E received by all animals during intra-uterine life and during the period of suckling. Comparable with the need of the embryo for E is the acceleration of the growth of tissue cultures when E is present, reported by Juhász-Schäffer.[15]

Considerable interest was at one time elicited by a false indication that E might play an important rôle in the utilization of iron or in the hematopoietic function (discussed later in section on vitamin E and naturally occurring antioxygens). Hogan and Harshaw,[9] however, had been unable to show an indication of anemia in females undergoing resorption of their fetuses from lack of vitamin E. Evans and Kohls [33] then conducted a careful examination of the blood of animals sterile through lack of vitamin E without finding any indication of disturbance of hematopoietic function; similar results were obtained by Nelson [34] and further confirmation came in the work of Sure.[35]

EFFECT OF OVERABUNDANCE OF VITAMIN E

The rôle of vitamin E in the reproductive process seemed sufficiently well established to lead to little expectation that an overabundance of it could "heighten"

26. Mason, K. E.: The Specificity of Vitamn E for the Testis: I. Relation Between Vitamins A and E, J. Exper. Zool. **55**: 101, 1930.
27. Evans, H. M.: Testicular Degeneration Due to Inadequate Vitamin A in Cases Where E Is Adequate, Am. J. Physiol. **99**: 477 (Jan.) 1932.
28. Parkes, A. S.: The Nature of the Anestrous Condition Resulting from Vitamin B Deficiency, Quart. J. Exper. Physiol. **18**: 397 (May) 1928.
28a. Marrian, G. F., and Parkes, E. S.: Effect of Anterior Pituitary Preparation Administered During Dietary Anoestrus, Proc. Roy. Soc., B. **105**: 248 (Sept. 2) 1929.
29. Evans, H. M., and Simpson, M. E.: Subnormal Sex-Hormone Content of the Hypophysis of Animals with Inadequate Antineuritic Vitamin B, Anat. Rec. **45**: 216, 1930.
30. Juhász-Schäffer (footnote 15) has shown that high dosage of E by mouth leads to its presence in the feces.
31. Evans, H. M., and Burr, G. O.: Development of Paralysis in Suckling Young of Mothers Deprived of Vitamin E, J. Biol. Chem. **76**: 273 (Jan.) 1928.
32. Evans, H. M.: Relation of Vitamin E to Growth and Vigor, J. Nutrition **1**: 23 (Sept.) 1928.
33. Evans, H. M., and Kohls, C. L.: Vitamin E and Anemia, Anat. Rec. **38**: 52, 1928.
34. Nelson, V. E.; Ohrbeck, Esther; Jones, R. L., and Taylor, M. W.: Cod Liver Oil for Reproduction, Am. J. Physiol. **85**: 476 (July) 1928.
35. Sure, Barnett; Kik, M. C., and Walker, Dorothy J.: Effect of Vitamin E. Deficiency on Hematopoietic Function, J. Biol. Chem. **83**: 401 (Aug.) 1929.

fertility, i. e., lead to the birth of larger and better litters. There was no evidence whatever that with low E the ovary was impaired in its power to mature and discharge the normal number of eggs at any ovulation period. The intervention of E seemed to depend essentially on obscure fetal need for the substance and it appeared *a priori* unlikely that high E could be reflected in larger litters unless there was a considerable and late prenatal mortality in all normal cases due to inadequate E. As a matter of fact the reproductive performance of animals given from twice to twenty times the amount of vitamin E required for normal reproduction did not exceed the norm.

DISTRIBUTION OF VITAMIN E IN FOODS

Perhaps the chief surprise encountered in the exploration of animal tissues for the presence of vitamin E relates to a marked difference from vitamin A; that is, its higher concentration in the general body musculature and fat than in such organs as the liver and kidney or in the gonads. And it is also to be emphasized that in neither of these tissues is it present to any concentrated extent—to the extent, for example, at which it is encountered in the seeds of cereals (wheat, corn). In marked contrast with the paucity of E, even in its highest depots in animal tissues, is its concentration in the organs of certain plants, especially in green leaves and seeds. It is abundant in lettuce, spinach, alfalfa and watercress. In the cereals it occurs exclusively in the embryo, not in the endosperm, and always in the fat there present, so that a quantitative extraction may be made by subjecting wheat germ, for example, to percolation with ether. Wheat germ oil has in fact heretofore constituted the highest known source of the vitamin. Most vegetable oils contain it, though not to any concentrated extent. Some controversy has arisen over the possible occurrence of the vitamin in cod liver oil. Its customary absence from this oil confers a boon on vitamin E investigators on account of the well known use of this oil as a high source of vitamin A and D in such nutrition experiments. In fact, had it been present in this oil, the original detection of vitamin E would not have been made; and it is certain that with some samples very high levels of cod liver oil can be fed without fertility occurring (Evans et al.); this view has been concurred in by Hogan and Harshaw,[9] Sure,[36] Mattill and others—yet Nelson,[37] and Simmonds, McCollum and Becker [38] have interpreted certain experiments as pointing to the presence of E in certain samples or brands of the oil of the cod's liver.

VITAMIN E AND NATURALLY OCCURRING ANTIOXYGENS

In 1922, McCollum and his co-workers [39] made the important observation that in the presence of certain salt mixtures (salts 20) ophthalmias developed in their rats whereas in the presence of other salt mixtures (salts 185), such was not the case. They thought that these ophthalmias were due to the high content of sodium or chlorine in the salts.

Later they [40] found that the incorporation of 3 per cent or more of wheat germ in their diets prevented these "salt ophthalmias." Mori,[41] from his histologic studies, concluded that these "salt ophthalmias" and the ophthalmias induced through vitamin A deficiency were the same. From the known facts of the ease with which vitamin A is destroyed by oxidation [42] and the excellence of ferrous sulphate as an oxidative catalyst,[43] it was concluded almost simultaneously by Jones [44] and McCollum and his co-workers [44] that the "salt ophthalmias" were the result of vitamin A inactivation due to the presence of ferrous sulphate.

The peculiarity found in these studies was the protection offered to vitamin A against destruction in the presence of ferrous sulphate by wheat germ oil and unextracted wheat germ.[45] Extracted wheat germ was no longer efficacious as a protective agent. Since wheat germ oil is one of the best sources of vitamin E, it was but natural to postulate that vitamin E was concerned in some unknown manner in protecting vitamin A against destruction.[46]

Mattill [47] made further progress in the elucidation of this problem. He found that diets which induced sterility were very susceptible to oxidation and that wheat germ oil offered a large measure of protection against such oxidation. He acted on the suggestion of Holm and his co-workers,[48] that certain compounds, present in oils and possessing hydroxy groups, are active in protecting fats against rancidity or oxidative changes. He found a correlation between the acetyl number of fats and the ease with which they are oxidized. From a consideration of his data he was able to postulate the existence of a balance between unsaturated fatty acids and the protective substances or antioxygens.[49] Wheat germ oil has a high acetyl value and therefore presumably is rich in antioxygens, and it is to this that it owes its stabilizing activity on vitamins A and E. In effect, so easily is vitamin E destroyed by slight changes in rancidity of the fats in which it is carried in solution that any analysis of vitamin E without simultaneous analysis for antioxygenic activity renders vitamin E analyses worthless.

The information on sensitivity of vitamins A and E to oxidative changes in the fats containing them has enabled Mattill [50] to explain some of the earlier results

36. Sure, Barnett: Dietary Requirements for Reproduction: IX. Cod Liver Oil Versus Wheat Germ Oil as Sources of Vitamin E, J. Biol. Chem. **74**: 45 (July) 1927.

37. Smith, H. O., and Nelson, V. E.: Cod Liver Oil for Reproduction and Lactation, Proc. Soc. Exper. Biol. & Med. **28**: 393 (Jan.) 1931.

38. Simmonds, Nina; Becker, J. Ernestine, and McCollum, E. V.: The Distribution of Vitamin E, J. Nutrition **1**: 39, (Sept.) 1928.

39. McCollum, E. V.; Simmonds, Nina, and Becker, J. Ernestine: On a Type of Ophthalmia Caused by Unsatisfactory Relations in the Inorganic Portion of the Diet: An Ophthalmia Not Due to Starvation for Fat-Soluble A, and Not Curable by Its Administration, J. Biol. Chem. **53**: 313 (Aug.) 1922.

40. McCollum, E. V.; Simmonds, Nina, and Becker, J. Ernestine: Further Studies on the Cause of Ophthalmia in Rats Produced with Diets Containing Vitamin A, J. Biol. Chem. **64**: 161 (May) 1925.

41. Mori, Shinnosuki: Primary Changes in Eyes of Rats Which Result from Deficiency of Fat-Soluble A in Diet, J. A. M. A. **79**: 197 (July 15) 1922; The Pathological Anatomy of Ophthalmia Produced by Diets Containing Fat-Soluble A, but Unfavorable Contents of Certain Inorganic Elements, Am. J. Hyg. **3**: 99 (March) 1923.

42. Hopkins, F. G.: The Effects of Heat and Aeration on the Fat-Soluble Vitamin, Biochem. J. **14**: 725, 1920.

43. Karczag, L.: Studien über Oxydationskatalysen: II, Biochem. Ztschr. **119**: 16, 1921.

44. Simmonds, Nina; Becker, J. Ernestine, and McCollum, E. V.: Relation of Vitamin E to Iron Assimilation, J. Biol. Chem. **74**: lxviii (July) 1927. Jones, J. H.: Relation of the Inorganic Constituents of a Ration to the Production of Ophthalmia in Rats, ibid. **75**: 139 (Oct.) 1927. Simmonds, Nina; Becker, J. Ernestine, and McCollum, E. V.: The Relation of Vitamin E to Iron Assimilation, J. A. M. A. **88**: 1047 (April 2) 1927. McCollum, E. V.; Simmonds, Nina, and Becker, J. Ernestine: Studies on "Salt Ophthalmia," III, Proc. Soc. Exper. Biol. Med. **24**: 952, 1926-1927.

45. McCollum, Simmonds and Becker (footnote 40 and footnote 44, third reference).

46. Simmonds, Becker and McCollum (footnote 44, third reference).

47. Mattill, H. A.: The Oxidative Destruction of Vitamins A and E and the Protective Action of Certain Vegetable Oils, J. A. M. A. **89**: 1505 (Oct. 29) 1927.

48. Holm, G. E.; Greenbank, G. R., and Deysher, E. F.: Susceptibility of Fats to Autoxidation, Indust. & Engin. Chem. **19**: 156 (Jan.) 1927.

49. Mattill (footnote 47). Mattill, H. A., and Crawford, B.: Autoxidation of Corn Oil as Related to Its Unsaponifiable Constituents, Indust. & Engin. Chem. **22**: 341, 1930.

50. Mattill, H. A.; Carman, J. S., and Clayton, Mary M.: The Nutritive Properties of Milk: III. The Effectiveness of the X Substance in Preventing Sterility in Rats on Milk Ratios High in Fat, J. Biol. Chem. **61**: 729 (Oct.) 1924. Clayton, Mary M.: The Comparative Value of Different Food Proteins for Reproduction and Lactation in the Rat: I. Beef Muscle Liver and Kidney, J. Nutrition **2**: 491 (May) 1930.

obtained in his laboratory. Sterility was obtained on milk and other diets carrying lard, but when the lard was removed there was invariably an increase in the fertility of the rats. The ease with which lard undergoes rancidity explained the instability of vitamin E in lard-containing diets. In this connection must be mentioned earlier observations made by Fridericia [51] on inactivation of vitamin A by hardened whale oil and lard, most likely through rancidity changes in the fats.

Supplee and Dow [52] report the interesting finding that whole milk powder, stored for two years in hermetically sealed cans, has been rendered unfit for reproduction in rats. Even in the presence of carbon dioxide, there is no marked improvement. Only when the air is deoxygenated will the milk powder render reproduction possible.

The extensive investigations of Nelson and his co-workers [53] on reproduction indicate that they too have been involved in this problem; i. e., the instability of vitamin E in fats undergoing oxidative or rancidity changes. Undoubtedly their diets carried sufficient vitamin E so that when this was added to the initial stores possessed by the rat, considerable reproduction could take place. When cod liver oil was mixed in the diets and allowed the development of rancidity changes,[8] the diet was rendered inferior for reproduction. It is also significant that lard-containing diets [54] failed to give reproduction. It is of especial significance that the Squibb cod liver oil which they assert gives the best reproductive performance [33] is also least prone to oxidative change.[55]

A special study of the destructive action of certain fats on vitamin E was reported by Evans and Burr,[56] from whose work it would appear that vitamin E is extraordinarily sensitive to even slight rancidity changes in fats. This is indeed the more remarkable since vitamin E will withstand drastic oxidation by a stream of air at 97 C. for twelve hours, resulting in extensive oxidative changes as shown by the darkening of the oil and the development of rancidity. There is no doubt, however, about the ability of slight rancid changes in lard to destroy readily any vitamin E mixed with it. In fact, as has already been indicated, this remarkable phenomenon has been the basis of the most successful sterility-producing diets.

Such being the case, it was a matter of some surprise when there appeared from McCollum's laboratory [38] a report indicating that certain lards not only did not inactivate vitamin E but even apparently contained it. It seems clear that not all lards behave alike in their destructive action on vitamin E. By using the Evans and Burr technic,[57] the presence of 22 per cent lard in a diet may be and usually is sufficient to inactivate the vitamin E in wheat germ even when the latter is present in the diet to the extent of 2 per cent. A surprising exception was, however, encountered by Evans and Lepkovsky, who secured two samples of lard [58] which failed to destroy the E in wheat germ even when mixed and allowed to stand at laboratory temperatures for three months. Many repetitions have convinced them of the validity of these particular results, but though they have repeatedly attempted to obtain other E-preserving lards they have not met with success.

The logical explanation here would seem surely to be that certain lards contain antioxygens, thereby preventing oxidative changes and conserving any vitamin E which may happen to be in the diet. Moreover, the very existence of the antioxygens in certain lards renders it not impossible that they also contain some vitamin E. There are no *a priori* reasons why lard should not originally contain more or less E. Since the vitamin is present in animal fats, it is also certain that the E could not be recognized unless antioxygens—usually absent from lards—are also present.

Recently, Cummings and Mattill [59] have studied simultaneously the vitamin E and the antioxygen of various fats and found a good correlation between the susceptibility of fats to oxidation and their content in E. They have also discussed the possible rôle of E itself as an antioxygen.

An interesting observation from Steenbock's laboratory [60] should be considered here. When 1 per cent ferric chloride in ether solution was added to stock diets, complete sterility resulted. The ferric chloride was mixed in the ration once a week, so that extensive rancidity changes could hardly take place. Yet the ration had a slight acrid odor, indicating that obscure changes had occurred. It illustrates in a rather spectacular manner the lability of vitamin E to these slight and obscure changes.

The dependence of vitamin E for its preservation on the presence of an antioxygen results in the close association of E and antioxygen. Thus, like vitamin E, the antioxygen is found in the unsaponifiable portion of the fat.[61] Like vitamin E, it is not precipitable by digitonin.[61] Olcott and Mattill [62] have fractionated the unsaponifiable lipids of lettuce and found that vitamin E and the antioxygen of lettuce cannot be separated by successive fractionation with ether, acetone, petroleum benzin and methyl alcohol, although they finally separated them by distribution between petroleum benzin and 92 per cent alcohol, vitamin E remaining in the petroleum benzin, and the antioxygen going into the 92 per cent methyl alcohol.

THE CHEMISTRY OF VITAMIN E

Much of the work on the chemical nature of vitamin E was done by Evans and Burr, which was summarized in a monograph.[63] Some of the properties of the vitamin may be briefly reviewed here.

Vitamin E is stable to high temperatures in the dry condition (up to 250 C.). Aeration at 97 C. for twelve hours does not destroy it. It is stable to ordinary light, but prolonged ultraviolet irradiation slowly inactivates it. Such stability to light and oxidation should be compared with the sensitiveness of vitamin E

51. Fridericia, L. S.: Inactivating Action of Some Fats on Vitamin A in Other Fats, J. Biol. Chem. **62**: 471 (Dec.) 1924.
52. Supplee, G. C., and Dow, O. D.: Reproductive Potency of Dry Milk as Affected by Oxidation, J. Biol. Chem. **63**: 103 (Feb.) 1925.
53. Nelson, V. E.; Heller, V. G., and Fulmer, E. I.: Studies on Yeast: VII. The Dietary Properties of Yeast, J. Biol. Chem. **57**: 415 (Sept.) 1923. Anderegg, L. T., and Nelson, V. E.: Milk Powders as Food: II. Observations on the Existence of Vitamin E, Indust. & Engin. Chem. **18**: 620 (June) 1926. Nelson, Jones, Adams and Anderegg (footnote 8). Nelson, Ohrbeck, Jones and Taylor (footnote 33).
54. Nelson, Heller and Fulmer (footnote 53).
55. Private communication by H. A. Mattill, University of Iowa, Iowa City.
56. Evans, H. M., and Burr, G. O.: Vitamin E: The Ineffectiveness of Curative Dosage When Mixed with Diets Containing High Proportions of Certain Fats, J. A. M. A. **88**: 1462 (May 7) 1927; The Destructive Effect of Certain Fats and Fractions Thereof on the Anti-Sterility Vitamin in Wheat Germ and in Wheat Germ Oil, ibid. **89**: 1587 (Nov. 5) 1927; The Antisterility Vitamin Fat-Soluble E, Memoirs of the University of California **8**: 116 (Aug.) 1927.
57. Evans and Burr (footnote 56, first reference).
58. Obtained through the courtesy of Dr. J. J. Vollertson of Armour and Company.
59. Cummings, M. J., and Mattill, H. A.: The Auto-Oxidation of Fats with Reference to Their Destructive Effect on Vitamin E, J. Nutrition **3**: 421 (Jan.) 1931.
60. Waddell, J., and Steenbock, Harry: The Destruction of Vitamin E in a Ration Composed of Natural and Varied Foodstuffs, J. Biol. Chem. **80**: 431 (Dec.) 1928.
61. Mattill and Crawford (footnote 49).
62. Olcott, H. S., and Mattill, H. A.: The Unsaponifiable Lipids of Lettuce: II. Fractionation, J. Biol. Chem. **93**: 59 (Sept.) 1931.
63. Evans and Burr (footnote 56, third reference).

toward such obscure oxidative changes as occur in the "rancidity" of fats, for it must be remembered that aeration at high temperatures, by itself apparently not very destructive to vitamin E, will greatly accelerate rancidity in fats, which are so destructive to E.

The vitamin is often stable to saponification in the cold, at 35 C., or in boiling alcohol. However, in some cases as much as 75 per cent of the E may be destroyed during the saponification. Such destruction may be avoided by using methyl alcohol or by adding an anti-oxygen such as dibenzylamine. Although neither saponification nor hydrogenation destroys vitamin E, the saponification of hydrogenated wheat germ oil results in loss of activity.

After saponification, vitamin E is found in the "nonsaponifiable matter," thus resembling vitamins A and D.

Hydrogenation does not destroy the activity of vitamin E, but bromination in glacial acetic acid does. Acetylation with acetic anhydride also destroys vitamin E, but dry hydrochloric acid in absolute alcohol has no deleterious effects.

Cooking or drying, or steam distillation is without harmful effect. Unlike A, vitamin E is not volatile in steam at 100 C.; at 180 C. and at 50 mm. pressure, however, E is quite volatile in steam. This may be compared with D, which is destroyed by steam distillation. Attempts to purify E by vacuum distillation result in considerable decomposition. The nonsaponifiable matter of wheat germ oil (original oil active in a single 500 mg. dose) will cure sterility of a female rat in a single 25 mg. dose. This material is mostly sitosterol, which is largely removed by crystallization from pentane and methyl alcohol solution. Partition between pentane and 92 per cent methyl alcohol still further concentrates vitamin E, and digitonin is used to remove the last of the sitosterol. Doses active in from 5 to 10 mg. are thus obtained. Further attempts to purify the material by distillation do not result in any great concentration of the active material.

A fractionating column, devised by Robert Cornish, using distribution between iso-octane (2-2-4 trimethyl pentane) and methyl alcohol has in his hands permitted further purification and also measurement of actual distribution ratios of the fat soluble vitamins without actually having any of them even approximately pure. Vitamin E is shown to be either a single substance or a mixture of substances of nearly the same distribution ratio. (A similar statement could be made regarding vitamin A or D.) The order of distribution ratios seems to be essentially the same in different solvents or at different temperatures, only the absolute values being affected. This order is, starting from the most fat-soluble, carotene, sitosterol, vitamin E and cholesterol (these two being nearly identical), vitamin D, ergosterol, linoleic acid, anthracene, anthraquinone, vitamin A, dibenzylamine, diphenylamine, quinone, hydroquinone, pyrogallol. As an illustration, it has been possible for Cornish in this way to secure the actual distribution ratios of the three fat-soluble vitamins as given in the accompanying table.

Distribution Ratios of Fat-Soluble Vitamins

Solvents	Temperature	Vitamin A.	Vitamin D.	Vitamin E.
C_6H_{12}-CH_3OH.....	0 C.	0.43	....	0.88
C_6H_{12}-CH_3OH.....	—20 C.	0.35	....	....
C_6H_{14}-CH_3OH.....	—20 C.	0.31	1.25	1.48
C_8H_{18}-CH_3CN.....	0 C.	0.25	3.7	5.0
C_8H_{18}-CH_3OH.....	0 C.	0.35	0.9	....

The hydrocarbons in the accompanying table are normal except octane, which is 2-2-4 trimethyl pentane. The figures for the ratios represent the concentration in the hydrocarbon layer divided by the concentration in the methyl alcohol layer, the same volume units being used in each case.

SPECULATION AS TO HOW VITAMIN E INTERVENES IN PHYSIOLOGIC PROCESSES

The secret underlying the vital need for vitamin E on the part of certain tissues (e. g., the testicular epithelium and the developing embryo) has not been penetrated as yet. It is especially interesting that the male germ cells exhibit this need but that the female germ cells do not. Since, however, the former cells are in infinitely more active and continuous mitosis, this difference might be looked on as due solely to the rate of tissue growth and the strange linkage of need by the developing fetus and by the testis thus explained. The male germ cells are, however, hardly produced at rates exceeding that involved in blood cell formation and we noted no disturbance in hematopoiesis when E was absent; furthermore, the remarkably rapid and entirely normal growth of the entire body that takes place when young animals are weaned and put on E-free diets would indicate that only during a "critical" time in fetal life are the tissues dependent on the vitamin.

Verzár, impressed with the relation of the hypophysis to the genital system, has recently urged the view that lack of E works its mal-effects by injury to the hypophysis; but, since the parenteral administration of fresh hypophyseal substance will not cure E-free gestations, his position seems hardly tenable.[63a]

NEED FOR VITAMIN E IN MAN AND OTHER ANIMALS

Indubitable as are the results which have been obtained by the careful study of small rodents (rats, mice), one cannot say that equally conclusive proof of the need for E on the part of other animal forms has as yet been furnished. Bartolini [64] believes that E is required by the rabbit, and Card [65] that it is required by the bird (poultry); it will be important for these researches to gain confirmation. The same must be said about indications of its importance in the reproduction of cattle, which Graves,[66] Vogt-Möller and others believe they have secured, and to an even greater extent of Poulsson [67] and Vogt-Möller's [68] few cases of habitual abortion in women, "cured" by the ingestion of E during pregnancy.

It may well be that other animal forms can actually synthesize the vitamin (if they need it at all) just as the rat does antiscorbutic C, yet until this has been demonstrated it is a preferable belief that the clearly expressed biochemical need for the substance E seen in the rat has some counterpart in the chemical mechanism of other animals.

63a. It is also to be noted that hypophyseal injury affects ovary and testis alike — a fundamental distinction from the condition due to inadequate E.

64. Bartolini, S.: La vitamina de la secundacion, Rev. Patol. Sper. **4**, 1929; Rec. Sudamericana Endocrinol. Immunol. quimoterop. **13**: 440, 1930.

65. Card, L. E.: Vitamin E Requirements of Poultry, Poultry Sc. **8**: 328, 1929.

66. Graves, R. R.: Personal communication to the author.

67. Poulsson, E.: Bemerkungen über fettlösliche Vitamine und Sterilität (habituellen Abort), München. med. Wchnschr. **74**: 674 (April 22) 1927.

68. Vogt-Möller, P.: Treatment of Habitual Abortion with Wheat Germ Oil, Lancet **2**: 182 (July 25) 1931. Vogt-Möller, P., and Bay, F.: Treatment of Sterility in Cows with Wheat Germ Oil, Vet. J. **87**: 165, 1931.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

CELLU GELATIN DESSERT. ASSORTED FLAVORS. UNSWEETENED

(Gelatin, Artificial Flavoring, Certified Color, Fruit Acid, Salt)

Manufacturer.—The Chicago Dietetic Supply House, Inc., Chicago.

Description.—Unsweetened, flavored and colored granular gelatin mixed with tartaric acid and a small quantity of salt. The color is certified by the U. S. Department of Agriculture. The flavors of the respective products are terpeneless oils of orange and lemon; and true fruit extracts of raspberry, cherry and grape fortified with imitation flavors of aldehydes and esters.

Manufacture.—The liquid flavoring, small quantities at a time, is added to the gelatin. The mix is sifted and dried at room temperature. The process is repeated until the required amount of flavoring has been added. Dry tartaric acid, the artificial color and salt are added; the mix is ground, sifted and measured into envelops (4 Gm. to each envelop).

Analysis (submitted by manufacturer).—

(analysis of raspberry flavored sample)

	per cent
Moisture	8.8
Ash	1.4
Sodium chloride	0.8
Fat	0.4
Protein (N × 5.55)	71.6
Reducing sugars as dextrose (J. Biol. Chem. **69**: 703; Folin-Wu method for blood sugar)	2.8
Other carbohydrates (microchemical method)	0.0
Tartaric acid	15.0

(analysis of orange flavored sample)

	per cent
Moisture	9.0
Ash	1.4
Sodium chloride	1.0
Fat	0.2
Protein (N × 5.55)	78.0
Reducing sugars as dextrose (same as noted above)	0.0
Other carbohydrates (microchemical method)	0.0
Tartaric acid	10.4

Calories.—3.6 per gram; 102 per ounce.

Claims of Manufacturer.—These dessert powders are especially intended for the preparation of pleasantly flavored and colored "carbohydrate free" gelatin desserts. The amount and kind of sweetening allowed in the individual diet must be added.

COMET BROWN RICE

Manufacturer.—Comet Rice Company, New York.

Description.—A packaged whole grain rice; contains the bran and germ.

Manufacture.—Rice in the hulls from the fields is cleaned of foreign material, such as dirt and other seeds. The hulls are removed by the usual hulling operations of rice mills. The rice groat free from hulls is further mechanically freed from extraneous materials without removal of the rice bran layer, is heated to destroy insect life, and is automatically packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	11.0
Ash	1.2
Fat (ether extract)	2.7
Protein (N × 5.95)	7.3
Crude fiber	0.9
Carbohydrates other than crude fiber (by difference)	76.9

Calories.—3.6 per gram; 102 per ounce.

Claims of Manufacturer.—A whole brown rice for all table uses of rice.

AIRY FAIRY KWIK-BIS-KIT

Self-Rising Flour; Flour, Vegetable Shortening, Phosphate, Sugar, Dry Skim Milk, Salt, Soda

Manufacturer.—Commander-Larabee Cereal Company (subsidiary of the Commander-Larabee Corporation, Minneapolis, Minn.).

Description.—A self-rising flour containing vegetable shortening, acid phosphates, sucrose, baking soda, powdered skim milk and salt; especially prepared for biscuits.

Manufacture.—The flour, salt, sugar, skim milk powder, baking soda and phosphates are thoroughly mixed in a batch mixer. The shortening is then incorporated by thorough mixing. The product is packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	9.5–10.5
Ash	4.6– 4.7
Salt (NaCl)	2.3– 2.5
Fat (ether extract)	13.8–15.0
Protein (N × 6.25)	7.5– 8.0
Sucrose	1.8– 2.2
Crude fiber	0.1– 0.2
Carbohydrates other than crude fiber (by difference)	64.5–61.6

Calories.—4.1 per gram; 116 per ounce.

Claims of Manufacturer.—A self-rising flour containing shortening already worked in and requiring only admixture with water or milk for the preparation of biscuits.

TAR HEEL BREAD

Manufacturer.—Waldensian Baking Company, Valdese, N. C.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, yeast, salt, sucrose, shortening, sweetened condensed skim milk and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	37.5
Ash	0.8
Fat	0.7
Protein (N × 6.25)	8.4
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	52.3

Calories.—2.5 per gram; 71 per ounce.

VB (VISSCHER BROTHERS) OLD FASHIONED APPLE SAUCE

Manufacturer.—Lyndonville Canning Company, Inc., Lyndonville, N. Y.

Description.—Canned apple sauce prepared from peeled and cored apples with added sucrose.

Manufacture.—Western New York apples of several varieties are carefully washed on roller conveyers by water sprays and are peeled and cored by machine. All blemishes and defects are cut out on trimming tables. The apples are emptied into a tank of salt water to prevent discoloration. After the salt bath they are again inspected on a roller conveyer, washed by water sprays, sliced by machine and cooked in an "apple sauce cooker" with the addition of water and sugar. The cooked apples are pulped, and seeds and harsh fibrous parts are removed. The apple sauce is automatically filled into cans or jars, which are sealed, processed under pressure and immediately cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	75.0
Ash	0.2
Salt (NaCl)	0.01
Fat (ether extract)	0.1
Protein (N × 6.25)	0.2
Reducing sugars, as invert	9.5
Sucrose (copper reduction method)	12.0
Crude fiber	0.5
Carbohydrates other than crude fiber (by difference)	23.6
Titratable acidity as malic acid	0.4

Calories.—1.0 per gram; 28 per ounce.

Claims of Manufacturer.—A slightly sweetened apple sauce for table use.

PILLSBURY'S BEST XXXX FLOUR (BLEACHED)

Manufacturer.—Pillsbury Flour Mills Company, Minneapolis.

Description.—An "all purpose" patent flour prepared from a variety of wheats.

Manufacture.—Selected varieties of wheats are cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL (June 28, 1932, p. 2210). Chosen flour streams are blended, bleached with 2.5 Gm. of nitrogen trichloride per barrel and 1 pound of a mixture of benzoyl peroxide and calcium phosphate to 40 barrels of flour and automatically packed in bags.

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.5
Ash	0.4
Fat (ether extraction method)	1.1
Protein (N × 5.7)	11.0
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	73.8

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—An "all purpose" patent flour.

H. G. F. BRAND GOLDEN SYRUP

(85 Per Cent Corn Syrup, 15 Per Cent Refiners' Syrup)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—H. D. Lee Mercantile Company, Kansas City, Mo.

Description.—A table syrup; a corn syrup flavored with refiners' syrup.

Manufacture, Analysis, Calories, Claims of Manufacturer.—See these sections for Banner Blue Corn Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817).

SQUIBB VITAVOSE

(Malted Wheat Germ Extract)

Manufacturer.—E. R. Squibb and Sons, New Brunswick, N. J.

Description.—A powdered extract of malted wheat germ and U. S. P. malt; essentially maltose, dextrins and "starch intermediate products"; contains vitamins B and G in substantial quantities; packed in tins.

Manufacture.—Wheat germ is cooked with a small amount of malt, the temperature is reduced by addition of water, additional malt is added, and the malting process is continued under definite conditions to convert the starch to dextrins, maltose and "intermediate products." The mixture is allowed to settle, and the supernatant liquid containing sugars and other soluble materials is drawn off, filtered and concentrated under conditions that protect the vitamin content. The mash is washed with water to remove adhering soluble materials. The wash water is filtered and added to the material already in the evaporator, which is concentrated to a syrup. The syrup is dried and the resulting solids are ground, sifted and automatically packed in tin cans.

The conditions of the entire process are designed to assure maximum extraction of water soluble substances from the malted wheat germ and malt and to protect vitamin B.

Analysis (submitted by manufacturer).—

	per cent
Moisture	3.
Ash	4.
Fat	0.
Soluble protein (albuminoid N × 6.25)	8.
Soluble amino and other nitrogenous compounds (amino N × 6.25)	7.
Reducing sugars as maltose	42.
Maltodextrins (total carbohydrates minus reducing sugars and dextrins)	25.
Dextrins (methyl alcohol precipitation method)*	18.
Crude fiber	0.0
Total carbohydrates (by difference)	78.
Iron (Fe)	0.013
Copper (Cu)	0.003
Manganese (Mn)	0.002

* Leach, Food Inspection and Analysis, ed. 4, page 654.

Calories.—3.7 per gram; 105 per ounce.

Vitamins.—Vitamin assay shows a content of vitamins B and G at least equal to 100 times and 30 times, respectively, that of equal weights of fresh raw whole milk.

Claims of Manufacturer.—Intended especially for the carbohydrate, food iron, and vitamins B and G supplement of milk for infants or malnourished adults and children, expectant and nursing mothers, invalids and convalescents.

DEAN'S QUALITY EVAPORATED MILK

Manufacturer.—Dean Milk Company, Chicago.

Description.—An unsweetened, sterilized evaporated milk.

Manufacture.—The milk is collected, examined and evaporated in accordance with the usual methods and procedure described for evaporated milk (THE JOURNAL, April 16, 1932, p. 1367).

Analysis (submitted by manufacturer).—

	per cent
Moisture	73.9
Total solids	26.1
Ash	1.5
Fat (ether extract)	7.8
Protein (N × 6.38)	7.1
Lactose (by difference)	9.7

Calories.—1.4 per gram; 40 per ounce.

Claims of Manufacturer.—This brand of evaporated milk is for general cooking, baking and table uses and infant feeding. The mixture of equal parts of the evaporated milk and water is not below the legal standard for whole milk. The curds formed in the stomach are smaller, softer and more readily digestible than those from raw or pasteurized milk.

KRE-MEL DESSERT (CHOCOLATE FLAVOR)

A Mixture of Sugar (Dextrose and Sucrose), Corn Starch, Cocoa, Vanillin

Manufacturer.—Corn Products Refining Company, New York.

Description.—Mixture of dextrose, corn starch, sucrose, cocoa; flavored with vanillin.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	1.5
Fat (ether extract)	1.4
Protein (N × 6.25)	3.1
*Dextrose	37.0
*Sucrose	23.0
*Starch	27.0
Crude fiber	0.0
Titratable acidity as HCl	0.05
Vanillin flavor	present

* Estimated from formula.

Calories.—3.7 per gram; 105 per ounce.

Claims of Manufacturer.—A dessert powder for the simple preparation of table desserts.

FOODTOWN RICE POPS

(Flavored with Malt, Sugar and Salt)

Manufacturer.—Foodtown Kitchens, Incorporated, Chicago.

Description.—Popped and toasted rice flakes made from cooked whole rice flakes flavored with malt extract, sugar and salt.

Manufacture.—Natural brown rice containing all the bran is cooked under steam pressure with a solution of malt extract, salt and sugar. The cooked rice is flaked, dried in a current of hot air to a definite moisture content and toasted in a revolving drum oven at a temperature which explodes the starch cells and puffs the flakes. The flakes pop as does popcorn. The broken flakes are screened out and the rice "pops" are automatically packed in paraffin paper liners in paper cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	3.7
Ash	3.3
Chlorides as sodium chloride	2.6
Fat (ether extract)	1.3
Protein (N × 6.25)	6.7
Crude fiber	0.9
Reducing sugars as dextrose	0.8
Sucrose (acid inversion and copper reduction)	8.2
Carbohydrates other than crude fiber (by difference)	84.1

Calories.—3.8 per gram; 108 per ounce.

Claims of Manufacturer.—Ready to eat "popped," cooked and toasted whole rice flakes.

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SATURDAY, AUGUST 6, 1932

LUNG CANCER IN MINERS

One of the most frequently cited instances of occupational cancer is the lung cancer of the Schneeberg miners. Indeed, the prominence that has been given to this group of cases has seemed out of proportion to the extent of the malady and the information it has given concerning the pathogenesis of cancer. Like many another medical item, it apparently got into the center of the current of medical literature and has not slipped off in the by-passes and eddies of neglect. For a long time primary cancer of the lung was listed as among the rare diseases, so this heaping up of cases of a rare tumor excited interest as a remarkable phenomenon. Now that bronchogenic carcinoma has become one of the common forms of cancer both in the clinic and in the necropsy room, the old story of the Schneeberg lung cancers is pulled into the light with almost every mention of this disease, with the hope that it may help to solve the mystery of the apparently startling increase of pulmonary cancer during the past few years. It is of interest to recall that the prevalence of fatal disease of the lung among these miners in the Saxon mines of the Erz Mountains was mentioned in 1500 by Agricola, although its cancerous nature was not established until 1879.

A new chapter in this story now appears with the report by Pirchan and Šikl [1] on the occurrence of the same disease in the famed mines of Joachimstal, the source of the pitchblende from which the first supplies of radium were obtained for use in therapeutics, and which still produce about 2 Gm. of radium chloride a year despite the competition of the larger radium deposits of Africa and other countries. These mines are on the Bohemian side of the Erz Mountains, only twenty miles from the mines of Schneeberg, and it is a strange story of mental resistance that the physicians of Joachimstal seemed not to realize that the high mortality from pulmonary disease among their miners was probably related to the condition killing their neighbors on the other side of the mountains. The report of Pirchan and Šikl leaves the suspicion that mining and public health officials may have possessed a certain lack of desire to have such a possibility made prominent—there are rumors that such things have happened elsewhere. At last, however, an investigation has been made with the assistance of the Health Organization of the League of Nations, and postmortem examinations were made on the bodies of thirteen Joachimstal miners who died during 1929-1930, revealing that no less than nine of these had primary carcinoma of the lung. Furthermore, in the year following this period of postmortem study twelve miners have died, in nine of whom the clinical diagnosis was pulmonary cancer. The authors state that "since the beginning of that year it has been impossible, for reasons we need not state here, to perform any necropsies of diseased miners."

One striking feature of this report is the late occurrence of the disease. Thus, six of the nine men had been pensioned off several years (from six to twenty-seven years) before dying of lung cancer. Also, though a systematic examination of three hundred and twenty-three mine workers revealed no cases of this disease, in three of eighty-three pensioned miners a probable diagnosis of lung cancer could be made. This observation is in harmony with that made in many other types of cancer, that the development of a malignant condition is a matter of several years after the inciting agent begins to act. For example, the bladder cancer of dye workers also first makes its appearance ten or fifteen years after the exposure, often there having been an interval of ten or more years after cessation of work with the dyes. As pointed out by Murray,[2] the period of several weeks to months that elapses before cancer develops in mice painted with tar corresponds to just about the same fraction of the entire life cycle of these animals that the seven to fifteen years latent period usually observed with industrial cancers constitutes in the human life span. These facts suggest that cancer of the stomach, breast or uterus occurring in a woman at the age of 45 owes its origin to a slow continued process which began ten, fifteen or even more years before, and not usually to some event immediately preceding the first visible appearance of the new growth.

As yet it is no more clear why pulmonary cancer occurs with such astounding frequency in these two small groups of miners than it is established why through most of the world it seems to have changed from one of the rare forms of cancer to one of the commonest forms, according to the experience of many pathologists. Apparently workers in other mines do not suffer in this way, although with many types of mining there is fully as much or more pulmonary damage leading to fibrosis, bronchiectasis and phthisis. It has been suggested that inhalation of arsenic dust might account for the Schneeberg cancer, but miners

1. Pirchan, A., and Šikl, H.: Cancer of the Lung in the Miners of Jáchymov (Joachimstal), Am. J. Cancer **16**: 681 (July) 1932.

2. An Explanation for the Influence of Age on the Occurrence of Cancer, editorial, J. A. M. A. **94**: 870 (March 22) 1930.

elsewhere working with ores containing arsenic and cobalt have not been reported as presenting a similar high incidence of cancer. Naturally in these days the fact that, in both the Schneeberg and the Joachimstal mines, large radium deposits exist, and that the air contains much radium emanation, up to 50 mache units, arouses the suspicion that herein lies the inciting agent of the lung cancers. The miners themselves state that discovery of a vein rich in uranium is always followed some years later by a strongly increased mortality among them, but analysis of a part of a cancerous lung from one of the miners revealed no radioactivity, and for that matter there was no arsenic, cobalt or uranium. The miners in other parts of the world who have been working with radioactive ores should now be studied thoroughly to determine whether they have been jeopardized by their occupation, as suggested by the Schneeberg-Joachimstal experience, so that, if such a danger exists, steps may be taken to guard against it.

VIRUSES

A considerable group of maladies is at present classed under the designation of virus diseases. Smallpox, vaccinia, yellow fever, rabies, poliomyelitis, herpes simplex, foot-and-mouth disease, fowl pox, fowl plague, canine distemper, and psittacosis are included. Although the exact nature of the pathogenic factors involved remains unknown, the large group of virus diseases is "loosely hung together mainly by the thread of filterability of the active agents which cause them." In his Harvey Lecture in 1929, Goodpasture [1] remarked that it seems almost hopelessly confusing to one newly introduced to the subject of filtrable viruses to find such a formidable array of apparently unrelated or at most seemingly superficially related morbid entities grouped together nominally only on the basis of the fact that their active agents can, in some cases with ease and in others with great difficulty, be forced through the small pores of so-called antibacterial filters of various kinds. What possible congenial relationship might the virus of smallpox, for example, bear with that of the wilt of caterpillars or the transmissible lysis of bacteria?

It has become apparent to investigators of virus problems that they are dealing with entities quite different from those represented by bacteria, fungi, spirochetes and protozoa. Skepticism has arisen as to whether the agent of any virus disease is actually a "living" something. The phantasy of writers has wandered through mazes of unwarranted speculations. The suggestion has been made that there may be a spontaneous generation of viruses. Abandoning the welter of uncertainties, Rivers [2] of the Rockefeller Institute for Medical Research has attempted to answer some of the skeptics. In his presidential address before the American Society for Clinical Investigation last May he pointed out that, although the exact nature of the etiologic agents is unknown, it is somewhat of an exaggeration to say that the agents themselves are unknown. The viruses of the familiar virus diseases can be separated one from another and from ordinary bacteria. Furthermore, in many instances their presence in a variety of materials can be ascertained with much more ease and assurance than is the case with certain bacteria.

It is too early to accept any of the hypotheses as to the origin of the viruses. There has been some recognition of the circumstance that many of the filtrable agents seem to bear a peculiar relationship to cells in the production of lesions in the host, and their manner of action appears to be different from that of known micro-organisms. Nevertheless some students have ventured to derive the viruses from bacteria, taking account of the so-called mutations of certain micro-organisms. For a long time, Rivers remarks, a few investigators have held that certain virus diseases are induced by ordinary bacteria. Now that attention is being focused on filtrable forms of bacteria, workers in increasing number are adopting the belief that viruses are merely filtrable, invisible and noncultivable elements of ordinary bacteria. Without going into details of the available knowledge of bacterial life cycles and their invisible and noncultivable forms, one can say that proof of many of the statements regarding them is lacking. Since even the existence of bacterial life cycles is doubtful, Rivers adds, it seems unwarrantable to offer presumptive filtrable forms of them as the explanation of another unsolved problem, the nature of the viruses.

Many readers will be surprised to learn that the viruses may be situated near the line that separates inanimate transmissible incitants from minute living organisms. The transition from one side of the line to the other may be so gradual that no great difference in the types of disease caused by agents near the line is perceptible. Such a statement, says Rivers, is strongly reminiscent of a remark by Aristotle that "nature makes so gradual a transition from the inanimate to the animate kingdom that the boundary lines which separate them are indistinct and doubtful." Rivers pointed out that, for more than thirty years, investigators in considerable number have waited for the veil of mystery that surrounds the viruses to be lifted by deft hands capable of cultivating these agents on lifeless mediums. If the viruses are minute obligate parasites incapable of multiplication in the absence of living susceptible host cells, or if they are products of cellular perversion reproducible in series, it would be a waste of time to wait for this to eventuate. Fortunately, Rivers concludes, a number of workers are already attempting by other means the study of the virus diseases and their etiologic agents. That a certain amount of success may attend these methods

1. Goodpasture, E. W.: Etiological Problems in the Study of Filterable Virus Diseases, Harvey Lectures, 1929-1930, **25**: 77, 1931.
2. Rivers, T. M.: Viruses, Science **75**: 654 (June 24) 1932.

is proved by the results of recent work on vaccinia, psittacosis, canine distemper, poliomyelitis and yellow fever.

CHEMISTRY OF INSULIN

The story of the discovery of insulin is too well known to need repetition. The ready availability of the hormone has permitted a radical change in the mode of treatment of diabetes and as a consequence insulin has assumed an important place in therapeutics. These circumstances have stimulated the efforts of organic chemists to learn more about its structure with the ultimate hope that man's need may be safeguarded through the ability to synthesize it. A significant step in advance was made by Abel in 1926 when he succeeded in crystallizing insulin. Subsequently it was shown that this crystalline material exhibits the maximum physiologic activity so far obtained in any preparation. Furthermore, neither the mode of preparation nor the origin of the crude material from which the crystals are made seem to alter the potency of the final product. Thus, it appears that the crystalline material possesses the characteristics of a pure compound. It has subsequently been subjected to vigorous chemical investigation, the results of which have recently been summarized by Jensen.[1]

Crystalline insulin is a protein and shows the high sulphur content of 3.2 per cent that appears to be present in the disulphide linkage. Jensen and his co-workers have carried out new hydrolyses in order to determine more accurately the amino-acids that constitute the insulin molecule and their relative quantities. The available evidence to date indicates that there is more than 10 per cent each of cystine, tyrosine, glutamic acid and leucine and that histidine, arginine and lysine are present in smaller amounts. The presence of hydroxyvaline and proline is doubtful. Is the physiologic action of insulin linked with a so-called prosthetic group attached to the protein or does it arise from certain intramolecular amino-acid groups? Thus far the activity has not been attributed to a "foreign" chemical grouping associated with the protein.

One of the devices employed by the organic chemist to determine active groups is to combine them with known reagents and thus render them inoperative; then by suitable treatment the original grouping can frequently be restored. Acetic anhydride, aldehydes and acid alcohol used as "blocking" agents, as do even the mildest reducing agents, inactivate the insulin; in some instances the activity does not return when the reagent is subsequently removed. It appears, therefore, that the integrity of the chemical groups with which the foregoing reagents combine is essential to the physiologic action of insulin. If such active groups could be split off and the amino-acid thus affected could be determined, important information of the constitution of the effective part of the insulin molecule would be available. This has been done with hydrochloric acid at 100 C. and also with alkali. The first procedure results in an inactive coagulum, which, however, is dissolved by alkali to give an active but noncrystallizable product. When crystalline insulin is treated with alkali, both sulphur and ammonia are split off. A careful consideration of the details of the foregoing reactions has led the Johns Hopkins investigators to assume that the characteristic part of the complex insulin molecule consists partially or entirely of cystine combined directly with glutamic acid, this grouping in further combination with the rest of the molecule. Although it is emphasized that additional evidence is required to establish the validity of these assumptions, one who is familiar with the difficulties of this type of research recognizes a significant advance in the attempt to determine the chemical constitution of insulin. The successful culmination of this effort will be a worthy accompaniment to the success already achieved in other directions in connection with insulin.

1. Jensen, H.: Science **75**: 614 (June 10) 1932.

Current Comment

MALIGNANT DIPHTHERIA

Within the last two years, highly malignant diphtheria has appeared in several European cities.[1] In one Düsseldorf hospital, the diphtheria mortality rose to 50 per cent in spite of enormous doses (e. g., 140,000 units) of diphtheria antitoxin. Numerous theories have been proposed to account for this new malignancy, the most obvious being the assumption that a new toxin specificity has been evolved. If so, a polyvalent diphtheria antitoxin should give renewed clinical victory. Current studies of relative toxin specificity, however, do not yield evidence to support this theory. Aoki[2] of the bacteriologic institute at Senai, Japan, has studied the "dissociation" of B. diphtheriae under test tube conditions. While he was able to produce at will several distinct agglutinogenic "mutants" of each pure diphtheria strain thus far studied, he found that all the test tube "variants" were qualitatively identical in toxin production. An antitoxin produced by immunizing animals against any one of the toxins neutralized completely all toxins thus far tested. A similar apparent stability of toxin was demonstrated with twelve test tube "dissociates" of the Perez bacillus. Few toxin studies have thus far been made with cultures isolated from the new "diphtheria gravis." Dr. Hans Lindemann[3] of the Children's Clinic, Düsseldorf, has grown several "gravis" strains in synthetic mediums, with parallel cultures of usual strains. He was able to demonstrate no qualitative or quantitative differences in the toxins of the two clinically distinct types of diphtheria organisms. Both were

1. Diphtheria Gravis, editorial, J. A. M. A. **99**: 227 (July 16) 1932.
2. Aoki, K.: Ztschr. f. Immunitätsforsch. **73**: 444 (March) 1932.
3. Lindemann, Hans: Ztschr. f. Hyg. u. Infektionskr. **113**: 288 (Jan. 16) 1932.

neutralized perfectly by ordinary diphtheria antitoxin. Unless it can be assumed that artificial culture conditions and animal tests are too crude to reveal differences of specificity in natural infections, factors other than "toxin mutation" must be considered as the probable cause of the excess mortality.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

August 8. Poisonous Snakes.
August 10. Vesalius and Anatomy.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM.

The subject for the week is as follows:

August 13. First Aid.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Fluorine Content of Drinking Water.—At least forty-five communities where mottled enamel of the teeth is endemic have been revealed as the result of investigations carried on in the past year throughout the state. About 110 public and 55 private water supplies have been analyzed. Practically every community in the state with a population large enough to warrant investigation was visited, and the occurrence or absence of mottled enamel was recorded. Examination was made of the permanent teeth of school children, and the water supply was sampled at the time of the examination. The majority of the communities in which mottled enamel was found lie along two rivers, the Gila and the San Pedro. In the summer of 1930, the department of human nutrition of the University of Arizona began a study of the cause of mottled enamel in St. David, a community in which detailed family histories of the inhabitants showed that all persons born and reared there had mottled enamel. Dietary studies showed no deficiency that could account for the defect. Analysis of the water from St. David and other communities in which the condition was endemic showed abnormal amounts of fluorine. When residue left after evaporation of the water was included in the ration of rats, a condition similar to mottled enamel, if not identical with it, was produced. Practical methods for the removal of the fluorine from public water supplies are being investigated as the result of these studies.

CALIFORNIA

Personal.—Dr. Walter E. Coppedge has been appointed city health officer of Alturas, succeeding Dr. Alexander Gibson.

Hospital News.—Eighty thousand dollars is available for the construction of a state central research pathologic laboratory at Agnew State Hospital, Agnew. Appropriation has also been made for a $50,000 biennial support fund for the project.

Society News.—The Orange County Medical Society was addressed, June 7, among others, by Dr. Arthur E. Guedel, Beverly Hills, on anesthesia.——At a meeting of the San Bernardino County Medical Society, June 7, Dr. Samuel B. Pond spoke on "The Psychosis and Its Treatment in General Practice," and Dr. Aaron J. Rosanoff, Los Angeles, "The Genetic History of Human Intelligence."——A recent meeting of the San Joaquin County Medical Society was addressed by Dr. Rulon S. Tillotson, Woodland, on "The Nasal Accessory Sinuses as Sources of Infection," and Dr. George N. Hosford, San Francisco, "Yellow Oxide of Mercury Salve (Pagenstecher's Ointment)—Its Use and Abuse."——Dr. Arthur L. Bloomfield, San Francisco, discussed "The Question of Gastric Analysis in Relation to Disease," June 15, before the Santa Clara County Medical Society.——Speakers before the Sonoma County Medical Society, June 9, in Petaluma, were Drs. Archie A. Alexander on "Modern Views on Hypertension"; William Whitfield Crane, Jr., "Kidney Hazards in Surgery," and Robert A. Glenn, "Interpretations of Kidney Functional Tests." All the speakers were from Oakland.

FLORIDA

Society News.—Lieut. Wilbur E. Kellum, Pensacola, among others, addressed a recent meeting of the Escambia County Medical Society on advances in aviation medicine.

Personal.—Dr. George C. Tillman, Gainesville, was installed as president of the Florida Railway Surgeons' Association at its recent annual meeting, and Dr. Jack Halton, Sarasota, was named president-elect.

GEORGIA

Society News.—The following program was presented before the Fulton County Medical Society, July 21: W. S. Elkin, Jr., Ph.G., "Duties of the Pharmacist in His Relations to the Physician"; T. C. Marshall, Ph.G., "Duties of the Pharmacist in Connection with His Services to the Public"; Drs. Carl C. Aven, "Duties of the Physician in His Relation to the Pharmacist," and Lewis M. Gaines, "Physician's Responsibility to the Public as Users of Drugs."

Meeting of Valley Medical Association.—Dr. Seale Harris, Birmingham, Ala., was named president of the Chattahoochee Valley Medical and Surgical Association at its thirty-second annual session at Radium Springs, Albany, July 12-13. The vice presidents are Drs. Robert C. Pendergrass, Americus, Ga., and John S. Turberville, Century, Fla., and the secretary, Dr. William J. Love, Opelika, Ala. The scientific program included the following speakers: Drs. Edgar F. Fincher, Atlanta, "Diagnosis and Treatment of Trifacial Neuralgia"; Charles E. Boynton, Atlanta, "Some of the Hazards of the First Year of Life," and Lonnie W. Grove, Atlanta, "Carcinoma of Colon."

ILLINOIS

Society News.—Dr. Fred Z. Havens, Rochester, Minn., addressed the Franklin County Medical Society at Benton, June 23, on "Malignancies About the Face."——Dr. Garold V. Stryker, St. Louis, addressed the Effingham County Medical Society, July 14, on "Epidermophytosis."

Crippled Children's Clinic.—The Warren County Medical Society, Monmouth, sponsored its annual summer clinic for crippled children, July 14. Seventy-five children were treated, half of whom were new patients. Their ages ranged from six months to fourteen years. Dr. Philip H. Kreuscher, Chicago, was in charge.

Chicago

Personal.—Dr. William H. Walsh has been engaged as technical adviser to the special committee of the Monterrey branch of the Mexican Medical Association by the governor and secretary of state of Nuevo Leon, Mexico, to assist in the planning, organization and equipment of the proposed medical center at Nuevo Leon, noted in THE JOURNAL, July 2, page 44.

KENTUCKY

Personal.—Dr. Charles H. Voorhies, city health officer of Lexington for eleven years, has resigned because of ill health. He was succeeded by Dr. Garland L. Weidner, Saginaw, Mich., formerly of Kentucky.——Dr. Joseph S. Goodpaster, Owingsville, has been appointed health officer of Bath County to succeed Dr. Elijah H. Maggard, who has been made superintendent of the Eastern State Hospital for the Insane, Lexington.——Dr. Fred W. Caudill, Hazard, has been appointed director of the Scott County health department, succeeding Dr. Edward R. Davies, who resigned several months ago to accept a similar position in West Virginia. Dr. Henry V. Johnson has been acting head of the department.——Dr. Henry H. Moody has been appointed health officer of Cynthiana.——Dr. S.

Spafford Ackerly, New Haven, Conn., has been appointed director of the Louisville Psychological Clinic to succeed Dr. Francis J. O'Brien, who resigned to become assistant director of the bureau of child guidance recently established in the New York City school system.

School for Health Officers.—The annual school for health officers conducted by the state board of health in Lexington, June 13-18, the most successful in the twenty-two years of its existence, was attended by about 100 health officers. Included among the speakers were Drs. Allen W. Freeman, professor of public health administration, Johns Hopkins School of Hygiene and Public Health, Baltimore, "Public Health Administration"; Winfield K. Sharp, Jr., director, county and other local health work, Tennessee state department of health, Nashville, Tenn., "Problems in County Health Work"; George A. Wheeler and Joseph W. Mountin, both of U. S. Public Health Service, Washington, D. C., "Pellagra" and "Rural Sanitation," respectively. Dr. Arthur T. McCormack, state health officer, opened the school with a lecture on "The Health Worker — Personal Deportment." Special features were addresses by Drs. Freeman and Irvin Abell, Louisville. The annual school this year marked the inauguration of a five weeks course in public health at the summer sessions of the University of Kentucky, the state board and the University cooperating, with a view to providing special training to physicians and others wishing to enter the public health field.

LOUISIANA

New Tumor Clinic.—Charity Hospital, Shreveport, formally opened its new tumor clinic department, July 12. The unit is equipped with a modern valve tube of 280,000 volts, a 30 milliampere high voltage therapy machine and a shockproof low voltage therapy treatment stand. Additional equipment includes 150 mg. of radium, distributed in fifty-three platinum and monel needles with accessories; radium work bench with protective booth, and a modification of Holfelder's field selector for the charting of patients for high voltage therapy, together with a complete clinical photographic department.

Memorial Meeting.—The Sixth District Medical Society designated its annual meeting in Baton Rouge, July 14, as a memorial to Dr. Robert P. Jones. Dr. Carl A. Weiss, Baton Rouge, president-elect, state medical society, delivered the eulogy. Other speakers on the scientific program included Drs. Arthur Vidrine, New Orleans, on "Review of Common Displacements of the Uterus"; Roy C. Young, Shreveport, "Encephalography in the Study of Convulsive States"; Philip H. Jones, Jr., New Orleans, "Some Considerations in Regard to Serum Proteins and Edema," and Cecil O. Lorio, Baton Rouge, "The Nervous Child." Dr. Lester J. Williams, Baton Rouge, was elected president to succeed Dr. Francis F. Young, Sr., Covington, and Dr. Cecil O. Lorio, Baton Rouge, secretary, to succeed Dr. Hezzie D. Bulloch, Covington. Following the meeting, the retiring president, Dr. Young, entertained the society at a banquet.

MARYLAND

Personal.—The honorary degree of doctor of Hebrew letters was conferred on Dr. Harry Friedenwald, emeritus professor of ophthalmology, University of Maryland School of Medicine, Baltimore, at the seventh commencement exercises of the Jewish Institute of Religion, June 5, in New York.

Report of Model Health Unit.—Six tuberculosis clinics involving 144 chest examinations were conducted by the Anne Arundel Health Department in the first six months of 1932, according to a report issued July 5. This department was instituted in 1931 as a model health unit to work out programs of preventive medicine with emphasis on sanitation. It is maintained by the Rockefeller Foundation, Johns Hopkins School of Hygiene and Public Health, state health department and the county commissioners. Dr. John H. Janney, Jr., who has been connected with the International Health Division or the Rockefeller Foundation since 1921, is director of the unit. Among other things, nearly 2,000 laboratory examinations were made and 99 cases of communicable disease supervised. One hundred and sixty-eight examinations were made at twenty-six prenatal clinics in the county; 757 children were examined at health conferences; 3,539 children were examined in visits to schools, and 580 home visits to school children were made. Seventy-six inspections of dairy farms and twenty-nine inspections of camps were made. Anne Arundel County was selected as the most adaptable for this research work because it has a large population and is near Baltimore, and because its many rivers and shore lines create complicated health problems (THE JOURNAL, Aug. 22, 1931, p. 545).

MASSACHUSETTS

State Department Distributes Paralysis Serum.—The Boston Floating Hospital has been selected by the state department of health as one of its stations for the distribution to physicians, under prescribed conditions, of serum used in the treatment of infantile paralysis. This work, formerly conducted by the Harvard Infantile Paralysis Commission, is to be assumed by the state department of health during the coming fall. The consultation service will be furnished by the combined staffs of the Floating Hospital, the children's department of the Boston Dispensary and the pediatric department of Tufts College Medical School.

Dr. Pierce Honored.—The Dorchester Medical Club and other friends recently observed the completion of fifty years in the practice of medicine by Dr. Matthew Vassar Pierce, Milton, at a dinner. Dr. John W. Bartol, Boston, was toastmaster. The Dorchester Medical Club, of which Dr. Pierce is the senior member, is the oldest medical dining club in Greater Boston. It was formed by physicians of Dorchester and Milton in 1866 "for the purpose of professional improvement and social enjoyment." Monthly, since its organization, except during the summer, one member entertains the others at dinner and a second member reads a paper. During the sixty-six years of its existence, only forty-four physicians have been elected to membership. Dr. Pierce has been on the club's roll since 1882. He graduated from Harvard Medical School in 1880.

MICHIGAN

Training School for Nurses Discontinued.—Announcement has been made of the discontinuance of the training school for nurses at St. Luke's Hospital, Saginaw, August 31. With the exception of members of the senior class of nurses, who will graduate in September, all student nurses will be transferred to Hurley Hospital School of Nurses in Flint during August. After October 1, St. Luke's will be operated entirely by graduate nurses.

University News.—Dr. Albert C. Furstenberg, associate professor of otolaryngology, University of Michigan Medical School, Ann Arbor, has been appointed professor in the department, succeeding the late Dr. Roy Bishop Canfield. Dr. Francis B. Fralick was promoted to assistant professor in ophthalmology. Dr. Vernon L. Hart has resigned as assistant professor of surgery at the school, to become head of the Miami Clinic, Dayton, Ohio, it is reported. Dr. John Alexander has been promoted to professor of surgery. The Children's Fund of Michigan will continue its support in dental research at the university.

Districts for Poliomyelitis Service.—The Michigan Commission on Infantile Paralysis, Lansing, has again divided the state into districts for the purpose of consultant service and distribution of serum in the treatment of poliomyelitis. An outbreak is not expected, the announcement states, but it is the commission's wish to be prepared during the present season when a rise in the incidence of the disease may be expected. Convalescent serum will be furnished without charge, but only through the regional directors and their duly appointed consultants. Instruction has been given to these distributors to supply serum for cases only when there are clearly manifested symptoms indicating poliomyelitis and when a spinal fluid examination has confirmed the diagnosis.

NEW HAMPSHIRE

Institute on Obstetrics.—Dr. James R. McCord, professor of obstetrics and gynecology, Emory University School of Medicine, Atlanta, Ga., began a six weeks institute in obstetrics, July 6, in several counties throughout the state. The cities in which the series is being conducted are as follows: Rochester, Manchester, Nashua, Laconia, Portsmouth, Concord, Peterboro, Hanover, Ossipee, Berlin, Whitefield, Claremont and Keene.

NEW MEXICO

Personal.—Dr. Charles Howe Eller, Albuquerque, has been appointed health officer of Valencia County, it is reported—Dr. Robert O. Brown, Santa Fe, was elected president of the New Mexico Social Hygiene Association.—Drs. James W. Laws and Charles F. Rennick, El Paso, Texas, presented papers on diseases of the chest and infant feeding, respectively, at a meeting of the Grant County Medical Society, Fort Bayard, recently.

NEW YORK

Heart Clinic in Syracuse.—The first heart clinic in Syracuse was started recently by the Onondaga Health Association. The plans for this clinic, which is held at the Syracuse Free Dispensary, were developed by a committee of physicians and laymen. Dr. Edward C. Reifenstein, professor of clinical medicine, Syracuse University School of Medicine, is chief of staff for the clinic. The Milbank Memorial Fund contributed an electrocardiograph, a basal metabolism apparatus and other equipment to the clinic.

Interstate Medical Meeting.—The Medical Society of Chautauqua County sponsored a meeting of physicians of the surrounding territory in New York, Pennsylvania and Ohio at Chautauqua, July 27. Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, addressed the meeting on "The Trends of Private Practice" and also gave a public address on "Foods, Fads and Follies." Among other speakers were Drs. James F. Rooney, Albany, on "Hypertensive and Arteriosclerotic Heart Disease," and Joseph Colt Bloodgood, Baltimore, "Activities in the Control of Cancer in London and Paris." Dr. Louis C. Kress, Buffalo, presented an exhibit of pathologic material. A golf tournament was held in the afternoon.

New York City

Physicians to Lecture on Psychology.—Among lecturers announced for the fall program of the New School for Social Research are Drs. David M. Levy of the Institute for Child Guidance, who will give two courses on "Behavior Problems in Children" and "Case Studies in Mental Hygiene," and George K. Pratt of the National Committee on Mental Hygiene, who will give a course in mental hygiene for teachers.

Course in Orthopedic Surgery.—The New York Post-Graduate Medical School of Columbia University will offer an intensive course in the theory and practice of orthopedic surgery and bone and joint surgery, including treatment of malunited and ununited fractures, October 24-29. Dr. Fred H. Albee, professor of orthopedic surgery, will be in charge of the course, which will be for medical graduates. Lectures and demonstrations will include operative clinical demonstrations in surgery of the bones and joints, manufacture and fitting of artificial limbs and compensation relationships.

Personal.—Dr. James Louis Joughin, clinical professor of neurology, New York Post-Graduate Medical School and Hospital, has been appointed director of the department to succeed the late Dr. Michael Osnato. Pursuant to the terms of the agreement between Columbia University and the New York Post-Graduate, Dr. Joughin was appointed acting executive officer of the department of neurology at the postgraduate school.——Dr. Chrisman G. Scherf has recently been transferred from the superintendency of Coney Island Hospital to that of Sea View Hospital, Staten Island.——Dr. Florence Rena Sabin of the Rockefeller Institute for Medical Research was awarded the first "National Achievement Award" conferred by the Chi Omega Sorority at a meeting in White Sulphur Springs, W. Va., June 27. The award was a medal executed by Miss Frances Grimes.——The University of Rochester recently conferred the honorary degree of doctor of science on Dr. James Ewing, professor of pathology, Cornell University Medical School.

OHIO

Counties Receive Joint Aid.—The rural health section of the U. S. Public Health Service and the International Health Board of the Rockefeller Foundation made available, July 1, a joint apportionment of $8,500 to enable five counties to continue health work on a whole time basis. The counties are Hocking, Fayette, Medina, Shelby and Richland. On account of the economic stress, these counties, which have had good public health service, were tending toward abridged part time service, *Ohio Health News* states.

Society News.—The Portage County Medical Society was addressed, June 2, in Kent, by Dr. Claude B. Norris, Youngstown, on "Management of Ordinary Skin Disorders."——At a meeting of the Athens County Medical Society in Athens, June 6, Dr. Arthur G. Helmick, Columbus, spoke on "Diarrheal Diseases of Children."——Dr. Fred Fletcher, Columbus, addressed the Guernsey County Medical Society in Cambridge, June 2, on "Handicap Surgical Risks."——A symposium on unusual experiences in obstetrics constituted the meeting of the Hempstead Academy of Medicine in Portsmouth, June 13.——Dr. Mark Millikin, Hamilton, addressed the Crawford County Medical Society in Bucyrus, June 6, on "Recent Ideals of the Social Aspects of Medicine."

Comparative Study of Births and Deaths.—In a recent report of the births and deaths in Ohio during the period 1910-1930, five low years were recorded in the tabulation for deaths: 1921 with a rate of 11.3; 1922, 11.3; 1924, 11.2; 1927, 11.3, and 1930, 11.4. In the comparative data for 1930, Gallia County had the highest death rate (19.4) among the eighty-eight counties of the state, and Summit County, the lowest, with a rate of 7.7. It was pointed out, however, that Gallia County is the seat of a state institution and that among the counties not having a state institution, Morgan County with a death rate of 17.9 had the highest rate. The city without a state institution having the highest death rate (20.4) was Kenton. The lowest death rate (3.5) for any city was recorded in Grandview. In the twenty year study of births, three low years were noted: 1912 with a rate of 16.9; 1929, 17.3, and 1930, 17.6. In the statistics for 1930, Scioto County with 1,990 births and a rate of 24.4 led all the counties of the state, and Carroll County with 193 births and a rate of 12 had the lowest birth rate. Among the cities, Wadsworth with 187 births had the highest birth rate (31.5), and Oakwood, with four births, the lowest rate (0.6).

OKLAHOMA

Society News.—Drs. Hugh G. Jeter and Francis E. Dill, Oklahoma City, presented a discussion of arthritis before the Garfield County Medical Society, Enid, in May.——Dr. Arthur S. Risser, Blackwell, addressed the Kay County Medical Society, May 23, at Tonkawa, on obstructive lesions.——At a meeting of the Woods-Alfalfa County Medical Society, Alva, May 17, Dr. Henry H. Turner, Oklahoma City, among others, spoke on undulant fever.——Dr. William M. Jones, Tulsa, among others, addressed the Okmulgee County Medical Society, Henryetta, May 16, on sinus operations under local anesthesia.——Dr. John T. Wharton, Durant, recently addressed the Bryan County Medical Society on "Classification of Physical Findings of World War Veterans." Dr. Battey B. Coker, Durant, was host to the society on this occasion.——Speakers before the Southern Oklahoma Medical Association, June 14, at Anadarko, included Drs. Ephraim Goldfain, Oklahoma City, on "Common Sense Management of Chronic Arthritis," and Charles P. Bondurant, Oklahoma City, "Diseases of the Oral Mucous Membrane."——A recent meeting of the Jackson County Medical Society was addressed at Waurika by Drs. William P. Rudell, Altus, and Jesse Bird, Eldorado, on "Specific Urethritis and Complications" and "Breech Presentations Management," respectively.

PENNSYLVANIA

Personal.—At the recent centennial exercises of Gettysburg College, Gettysburg, honorary degrees of doctor of science were conferred on Drs. Edmund W. Meisenhelder, York, and John McCrea Dickson, Gettysburg.

Society News.—Dr. Elliott P. Joslin, Boston, conducted a clinic and gave an address on diabetes before the Fifth Councilor District Medical Society in York, July 28. Dr. Eldridge L. Eliason, Philadelphia, talked on "Surgical Aspects of Diabetes." Following a dinner at the York Country Club, Dr. William H. Mayer, Pittsburgh, president, Medical Society of the State of Pennsylvania, made an address entitled "New Responsibilities—Old Ideals" and Dr. Walter F. Donaldson, Pittsburgh, on "The Threat of Socialization."

Philadelphia

The Visit of Sir Henry Wellcome.—Sir Henry S. Wellcome, class of 1874, visited for the first time the new buildings of his alma mater, the Philadelphia College of Pharmacy and Science, June 24. Preceding a luncheon given in his honor, Sir Henry placed a wreath on the grave of Dr. W. W. Keen. In the afternoon, at the college, he was presented with a facsimile reproduction of his graduation thesis and replicas of the molds and models that accompanied it. He plans to place these in the London museum which he founded. Sir Henry was recently elected a fellow of the Royal Society of England.

TENNESSEE

Hospital News.—The Emerald-Hodgson Hospital, Sewanee, which was destroyed by fire in December, 1931, has been rebuilt. Dedication ceremonies were held, June 12.

Society News.—Dr. Tom R. Barry addressed the Knox County Medical Society, Knoxville, June 14, on renal tuberculosis.——Dr. D. Lesesne Smith, Spartanburg, S. C., addressed the Sullivan-Johnson Counties Medical Society, Bristol, June 1, on preventive pediatrics.——Dr. Aareiel E. Goodloe addressed the Hamilton County Medical Society, Chattanooga, June 30,

on the larynx and its diseases.——Dr. Eugene M. Regen presented a report on "Four Consecutive Generations of Congenital Dislocated Hip" at a meeting of the Nashville Academy of Medicine and the Davidson County Medical Society, May 28. ——Drs. Barney Brooks and Hugh J. Morgan, Nashville, addressed the medical society of Carroll, Henry, Weakley and Benton counties at a meeting in McKenzie, June 14, on diseases of the gallbladder and hypertension, respectively.——Dr. Charles C. Stockard, Lawrenceburg, among others, addressed the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society in Hohenwald, June 28, on "Treatment of Placenta Praevia."——Dr. Granderson Hearn Bradley, Nashville, spoke on "Feeding of Infants and Children," June 14, before the Williamson County Medical Society.

VIRGINIA

Study of Public Health Methods.—The Milbank Memorial Fund is cooperating with the U. S. Public Health Service in a study of public health administration in the counties of Greenville and Brunswick. Edgar Sydenstricker, director of the fund's division of research and statistician in the public health service in an advisory capacity, was requested to assist in preparing the plans for this study. The quarterly bulletin of the fund describes this as the first of a series of studies to be undertaken by the office of studies of public health methods of which Dr. Joseph W. Mountin, surgeon, U. S. Public Health Service, is in charge. The public health activities in these two counties are under the administration of one full time health officer, and his staff consists of two public health nurses, one sanitary inspector and a clerk. The two counties have a total population of about 30,000, thus offering a contrast in public health facilities and procedures to those developed in Cattaraugus County, New York.

Society News.—At a meeting of the Medical Association of the Valley of Virginia at Harrisonburg in May, speakers included Drs. Claude C. Coleman and Roy K. Flannagan, Richmond, on surgical conditions of the brain and spinal cord and childhood tuberculosis, respectively.——Among others, Dr. Douglas G. Chapman, Richmond, addressed the Southside Virginia Medical Association at its quarterly meeting in Suffolk, June 14, on the valves of the heart.——Among other speakers, Drs. Charles H. Peterson and Albert F. Doyle addressed the Roanoke Academy of Medicine, June 6, on gallbladder disease and recurrent ectopic pregnancy, respectively.——Dr. Everett C. Drash, University, among others, presented a paper on benign tumors of the chest at a meeting of the Piedmont Medical Society, Orange, June 2.——The Old Dominion Medical Society, at its annual meeting in Richmond, June 14-16, installed Dr. Edward B. Harris, Nottoway, as president. Dr. Philip A. Scott, Newport News, was made president-elect, and Dr. James H. Blackwell, Jr., Richmond, secretary. The next annual session will be held at the Bay Shore Hotel, Buckroe Beach. This society is composed of Negro physicians of Virginia.

GENERAL

Directory of Occupational Therapists.—The first National Directory of Qualified Occupational Therapists contains a classification of registrants by states and counties. All therapists listed in it were registered during 1931. The American Occupational Therapy Association at 175 Fifth Avenue, New York, at its annual meeting in 1930 approved the plan for this directory. Two divisions compose the directory: the main register for persons qualified to register as "occupational therapist, registered," and the secondary register, for persons qualified to register as "occupational assistant, registered."

Institute on Health Education.—The first institute on health education to be conducted by the public health education section of the American Public Health Association will be held at Hotel Willard, Washington, D. C., immediately preceding the annual meeting of the association, October 24-27. The purpose of the institute is to provide instruction in the content and methodology of health education to a limited number of persons actively engaged in health education. Discussions will be held on health education instruments, sources of information, building programs, and program execution. A registration fee of $5 will be required.

Automobile Fatalities in Four Weeks.—The U. S. Department of Commerce announces that, during the four weeks ended July 9, eighty-six large cities in the United States reported 522 deaths from automobile accidents, as compared with 695 deaths during the four weeks ended July 11, 1931. Most of these deaths were the result of accidents which occurred within the corporate limits of the city. For the fifty-two week periods ended July 9, 1932, and July 11, 1931, the totals for the cities were, respectively, 8,616 and 9,217, which indicate a recent rate of 23.9 per hundred thousand of population as against an earlier rate of 26. Six cities reported no deaths from automobile accidents for the last four weeks, while nine cities reported no deaths from automobile accidents for the corresponding period of 1931.

Society News.—Officers of the Pacific Northwest Medical Association, for the ensuing year, are as follows: president, Dr. Bertram D. Gillies, Vancouver, B. C.; president-elect, Dr. Fred F. Attix, Lewistown, Mont.; vice presidents, Drs. John T. Wood, Coeur d'Alene, Idaho, and Matthew C. Riddle, Portland, Ore.; secretary, Dr. Frederick Epplen, Seattle, and executive secretary, Dr. Clyde W. Countryman, Spokane. The next annual meeting of the association will be held in Vancouver, B. C., June, 1933.——Mr. J. R. Smiley, superintendent, St. Luke's Hospital, Kansas City, Mo., was elected president of the Midwest Hospital Association, at its sixth annual conference, June 2-3, in St. Louis, and Mr. George W. Miller, superintendent, Morningside Hospital, Tulsa, Okla., president-elect. The next annual meeting will be held in Kansas City.——The American Pharmaceutical Association and the Canadian Pharmaceutical Association will meet jointly at the Royal York Hotel, Toronto, August 22-27.

A New Kind of Impostor.—A man recently registered at a hotel in Bristol, Tenn., under the name of "Dr. Wilson." Following his deposit of a large check, drawn on a Cincinnati bank, in a local bank, he introduced himself to the manager of a local hospital, stating that he had come to practice urology. He had a stethoscope prominently displayed in his side coat pocket. At the hospital he left several new hemostats and a pair of stitch scissors. He asked the requirements for being admitted to the staff. However, he made the mistake of asking if it would be necessary for him to be registered in Tennessee in order to practice. The hospital refused to cash his check, as did all the drug stores in the city. That evening he asked one of the doctors he had met to lend his car to him so that he could drive his "wife" around to see the city. The physician refused, and the man rented a car and disappeared. This person claimed to be a graduate of Tulane University and said he was registered in Louisiana, California and Colorado.

Eye Accidents in Child Play.—The National Society for the Prevention of Blindness has recently made a study of eye accidents suffered by children, based on newspaper reports for a three-month period. The annual total of cases noted in newspapers, estimated from this period, is from 750 to 1,000 cases. Almost one third of the cases in this study were caused by weapons and almost a fourth by fireworks. A survey of the legislation designed to prevent these accidents showed considerable variety among 102 cities of more than 50,000 population. Although 76 per cent of the cities had some regulation, in few of them was it broad enough to cover all types of weapons that cause eye accidents. Denver alone prohibits the making of air guns, which are the most important among weapons as the cause of accidents, but 63 per cent of the cities reporting have ordinances prohibiting their sale, use or possession. It was found that in schools and classes for the blind there are 500 pupils whose blindness was caused by accidents and about 70 are added each year.

Birth and Deaths of Infants in 1930.—Reports issued by the U. S. Department of Commerce indicate that there were 2,203,958 live births in the U. S. birth registration area in 1930, an increase of 34,038 over the preceding year. New Mexico had the highest rate (28.5) and Oregon the lowest (14.1). Comparison of the rates for white and Negro populations showed that the rate for the white race was 18.7 and for the Negro 20.7 for the area as a whole. In some states the rate for the white population was larger than that for the Negro—for example, Arkansas, Kentucky, Oklahoma and Tennessee. In the same area 1,321,367 deaths occurred, a rate of 11.3 per thousand of population. The number of infant deaths was 142,413, a rate of 64.6 per thousand live births. This compares with a rate of 67.6 in 1929. New Mexico, with the highest birth rate, had also the highest infant mortality rate (145.4). Washington had the lowest, 48.7. Comparing the statistics for the white and Negro populations, it appears that the white had a rate of 59.6 and the Negro 102.4. The report points out that unusually high rates are frequently due to the fact that a city is a hospital center and similarly that very low rates indicate that inhabitants use other areas for hospi-

talization. Consideration should also be given to the nature of the population. The birth registration area includes 94.7 per cent of the estimated total population of the United States.

FOREIGN

Lectures on Medical Photography.—Dr. Charles Claoué and Mr. Jean Painleve, Paris, will give a series of lectures on medical photography in Paris, October 10-15, according to an announcement. They will emphasize especially photographic documentation in otorhinolaryngology and in plastic surgery. For information address Dr. Claoué, 1 rue Singer, Paris, 16.

Course in Hospital Technic.—The International Hospital Association is sponsoring a graduate course in hospital technic at the Municipal and University Hospital, Frankfort-on-Main, Germany, September 29 to October 8. The courses will consist of lectures, demonstrations, visits to hospitals and discussions. Applications should be made to Geheimrat Dr. Alter, 5, Moorenstrasse, Düsseldorf, Germany.

Florence Nightingale Foundation.—At a meeting in London, July 6, a British council was appointed to cooperate with similar councils in other countries in the establishment and operation of an International Florence Nightingale Foundation. According to the *Lancet*, the memorial will continue and develop, by the endowment of additional scholarships, the graduate courses for nurses which the League of Red Cross Societies, with the cooperation of Bedford College and the College of Nursing, is now conducting in its training center in Manchester Square.

Prize for Treatment of Glaucoma.—The British Medical Association will award the Middlemore Prize in 1933 to the author of the best essay on the treatment of glaucoma. The prize was founded in 1880 by Mr. Richard Middlemore, Birmingham, and is awarded annually for the best essay or work on any subject which the council of the British Medical Association may select in any department of ophthalmic medicine or surgery. It consists of a check for £50 and an illuminated certificate. Essays must reach the medical secretary, British Medical Association House, Tavistock-Square, London, W. C. 1, on or before December 31, signed with a motto only and accompanied by a sealed envelop marked on the outside with the motto and containing the name and address of the author.

Society News.—An International Congress of Mediterranean Hygiene will be held in Marseilles, September 20-25, under the presidency of Professor Marchoux of Pasteur Institute, Paris, and under the auspices of the Faculty of Medicine of Marseilles. Dr. Emile Roux, director, Pasteur Institute, Paris, and Mr. A. Honnorat, former minister of public instruction, are honorary presidents. Those who wish to register as members may have full information from Prof. H. Violle, Faculté de Médecine, Palais du Pharo, Marseilles, or from Dr. Charles Broquet, 195 Boulevard St. Germain, Paris.——The tenth International Congress of Psychology will be held in Copenhagen, Denmark, August 22-27.——The third Congress of the French Scientific Society for Reparative, Plastic and Esthetic Surgery will be held in Paris, October 7-8, under the presidency of Dr. Dartigues. The program will include an exhibition of instruments, casts and books concerning esthetic surgery. Further information may be had from Dr. Dartigues, 81 rue de la Pompe, Paris, 16, or the secretariat of the society care of Dr. Charles Claoué, 1 rue Singer, Paris, 16.

Outbreak of Cholera.—More than 700 deaths have been reported in China, where an outbreak of cholera has been epidemic since about the fifteenth of May, the New York *Times* states. In Tientsin, up to June 25, there were 350 deaths in the hospitals; the number outside the hospitals was not known. Since May 23, when it was discovered, and up to July 1, 329 cases of the disease with 77 deaths, all of natives, were reported in Nanking. In Shanghai it was not known when the epidemic started but, up to July 9, 1,337 cases were reported with 82 deaths, of which 27 were foreigners (no Americans). These figures are described, the *Times* states, as a conservative estimate covering the International Settlement and Greater Shanghai. In Amoy, 15 cases and 11 deaths were reported in the week ended July 2; Canton, 487 cases and 180 deaths to July 2, including 104 cases and 22 deaths in the week ended July 2; Hankow, 14 cases and 3 deaths to June 18; Hongkong, 84 cases and 60 deaths to July 9; 33 cases and 33 deaths the week ended July 9, and Swatow, 5 cases and 3 deaths to July 9. Through a cablegram to the U. S. Public Health Service, it was learned that two cases of cholera had been reported aboard the *President Wilson* among steerage from Honolulu via Shanghai-Hongkong, the report continued.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 9, 1932.

Unsolved Problems of Vision

It might be thought that the attention given to vision by the greatest physicists and physiologists for over a century would have left no fundamental problems to be solved. This is not so. At the Imperial College of Science and Technology a meeting of the Physical and Optical Societies has been held. A discussion took place on problems of vision in which representatives of the United States, Canada, Germany, Italy and Finland took part. Professor Peddie of Dundee pointed out that, with the single exception of the theory of light itself, there was no such prolonged and intense divergence of view as on the subject of vision. He attributed this fact to the complexity of the phenomena and to purely subjective impressions being in question. Sir John Parsons (ophthalmologist) said that the visual apparatus was exasperating to the physicist. It was an analyzing instrument similar to but far more complicated than the measuring instruments with which he was familiar. Its variations were protean and it combined the functions of telescope, microscope, photometer, colorimeter and camera. In the eye were two receptive systems, one acting at low intensities of light and the other at high, and their responses were quantitatively, qualitatively and spatially different. It was not known whether the two were always in action at the same time or acted reciprocally on each other. All investigators, psychologists as well as physicists, seemed to agree that visual sensation was adequately described in terms of hue saturation and brightness. Yet the problem of the relation between brightness and saturation troubled Helmholz and had not yet been solved. The trichromatic theory explained color mixture and the unsaturation of spectral hues on the basis of stimulus values but failed to explain the luminosity curve of the photopic spectrum.

Dr. Hecht put forward a new theory of color vision. He said that there were probably at least two causes of color blindness—changes in the nervous system and changes in the retina—and at present it was not known how to separate the two. It seemed that the spectral characteristics of one of the receptors were changed, so that it became identical with one of the others. Thus a photosentitive substance in the green cones might become changed so that its absorption spectrum and probably its chemical constitution became identical with that in the red cones. Professor Drever of the psychologic laboratory of Edinburgh University held that yellow must be given the status of a fundamental color. In color theory one was not justified in looking on it merely as a mixture of red and green. Mr. Banister of Cambridge, in discussing retinal reaction time, showed the importance of the fact that the time taken to react to a visual stimulus was much greater in poor than in good light. Hence the difficulty of driving a car at twilight. The pedestrian or other object was observed a fraction of a second later than usual, and if the car was traveling fast this might represent a considerable distance on the road.

The "Patent Medicine" Fraud

In spite of all the exposures of the "patent medicine" fraud, it continues to flourish. The Advertising Association maintains an "Investigating Department" which is supposed to prevent and detect fraudulent and improper advertising, but glaring examples of this continue not only in small and obscure but even in the most widely read and the most influential journals. Only the few papers in this country which do not print such advertisements will mention the scandal at all.

Many years ago the British Medical Association published a book called "Secret Remedies," which gave the analysis of all the well advertised nostrums, in the hope that this would give a final blow to fraudulent claims. Many of the proprietors were angry at first, but the more astute turned this publication to account. In hundreds of markets all over the country, eloquent and loud-voiced men extol the merits of vaunted nostrums on the ground that they are in accord with the prescription in " 'Secret Remedies,' as guaranteed by the British Medical Association."

The Danger of Using Gasoline for Cleaning

The recent case in which a woman was cleaning a garment with gasoline in the open air and far from any flame, when a blaze occurred and she was burned to death, has directed attention to this danger. When dry fabrics, particularly silk, are rubbed in dry weather, electric sparks can be obtained. When fabrics are washed in water no such effect takes place, because water is a good conductor of electricity without the need of the leap through the air which constitutes a spark. Gasoline, on the contrary, is a nonconductor and may on its own account give rise to sparks when subject to friction with insulating materials. Therefore those who have the handling of gasoline in quantity, through nonmetallic hose pipes, are careful to lead any electricity generated to earth by means of a chain or wire. Serious explosions have occurred through neglect of this precaution. The use of gasoline for dry cleaning involves a risk which the utmost care cannot quite remove. A correspondent in the *Times* states that to do the job indoors amounts to criminal negligence. If done in the open, not only should the greatest care be taken to keep away from the lights (invisible gasoline will stream across the ground for yards and ignite from a flame at a surprising distance), but it should be assumed that there is always a slight chance that the gasoline will flare up spontaneously by electrical ignition. It is recommended that any fabric should be kept beneath the surface of the gasoline and that actual rubbing, as in washing a garment, is unnecessary and should be avoided. The better plan is to squeeze and stir the article about with a stout stick. Finally it may be cautiously wrung out by hand. In general it is best to keep the hands out of the gasoline. The gasoline should always be dried out of the article in the open air, never in the house.

The Indian Medical Service

At the annual dinner of the Indian medical service, which took place in London, great attention was called to realities in the situation in India ignored by politicians. Major Gen. J. W. D. Megaw, director general of the service, said that there was no hope for India unless it had an efficient medical and public health organization. The huge population of over 300 millions, which was rapidly increasing, was engaged in a constant struggle for a precarious existence. None of the proposals of party politicians in India could influence to any appreciable extent the great elemental forces now ruthlessly at work. The problem of India was essentially biologic and not political. He claimed that the first duty of medical research workers was to make a clear statement of the nature of the problem and the solution. But medical and public health workers could not deal with the situation alone; they needed the cooperation of experts in agriculture, industry, economics and education. India was rapidly reaching a situation that would demand the united efforts of Indians and Europeans. When that time came a strong all-India medical service would be a matter of vital importance.

Sir Samuel Hoare, secretary of state for India, said that the Indian medical service had been the pioneer of scientific work in the East and its work was not confined to medical science but extended to botany, zoology, geology, veterinary science, forestry and philology. When the history of India came to be written, it would be found that the benefits Britain had conferred on it far outweighed any material advantages she might have gained. There was the work of Ross, which had diminished the dangers of malaria. Thanks to Sir Leonard Rogers, it was now possible to cure leprosy in its early stages. Deaths from cholera had been reduced from 60 to 20 per cent. Successful campaigns had been carried on against liver abscess and kala-azar. The work of the Indian medical service was far from finished; it was only beginning to enter on a new and greater advance.

PARIS

(From Our Regular Correspondent)

June 29, 1932.

International Conference on Mental Hygiene

The International Conference on Mental Prophylaxis and Mental Hygiene was held in Paris, at the Hôpital Henri Rousselle, under the chairmanship of Mr. Justin Godart, senator, and former minister of health. A large number of medical psychiatrists had responded to the appeal of the committee on organization presided over by Dr. Toulouse, medical director of the Hôpital Psychiâtrique Henri-Rousselle, and president of the Ligue nationale d'hygiène mentale. Thirty countries were represented: Argentina, Austria, Belgium, Brazil, Bulgaria, Cuba, Czechoslovakia, Denmark, Esthonia, Finland, Germany, Great Britain, Greece, Hungary, Italy, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Rumania, Spain, Sweden, Switzerland, Turkey, Union of Socialist Soviet Republics, Uruguay and Yugoslavia. French representation included members of parliament, members of the municipal and general councils, high officials, and delegates of large welfare societies, all of which had joined with the scientists and the eminent practitioners enrolled at the congress: medico-legalists, alienists, neurologists, psychiatrists, psychoanalysts, psychotechnicians. After the opening address, delivered by Mr. Justin Godart, the paper of Professor Rudin on mental eugenics and mental prophylaxis was taken up. Several communications followed, notably those of Dr. Bufe, on the familial aid given the insane; of Dr. Placzek, on the prophylaxis of suicide, and of Dr. José Germain, on the new organization of psychiatry in Spain. The second day, the paper of Toulouse, Dupouy and Courtois, on "open" services for psychopaths, was considered. This paper was based on important information furnished by twenty-one countries, notably Germany, the United States, England, Brazil, Norway, Sweden and Czechoslovakia. It traced the history of the psychiatric movement in France, from the seventeenth century up to the creation of the center of mental prophylaxis of the department of the Seine. The afternoon was devoted to the presentation and discussion of the paper of Mr. Bersot on the unification of psychiatric statistics. The international conference closed with a visit to the departments of the Hôpital Henri Rousselle. In the evening, at the Sorbonne, Geheimrat Dr. Robert Sommer of Giessen gave (in German) an address, with projections, on the "Hereditary Characteristics of Goethe."

Discussion on the Nature of Beriberi

An exhaustive discussion on the nature of beriberi developed recently before the Société de médecine et d'hygiène tropicales. Mr. Placidi reported the observations in two epidemics of beriberi that occurred during his stay in the New Hebrides. In explanation of these two epidemics, it was difficult to assume an avitaminosis, for the workmen had in their diet a regular allowance of vegetables and fruits. Polished rice does not appear to have been the cause. The only etiology that seems tenable is infection. It is probable that groups coming from Asia introduced an infectious element in a milieu of overworked laborers living under deplorable hygienic conditions, in a hot and moist climate. These facts speak in favor of the infectious theory held by Noël Bernard. Further, Mr. P. Decourt observed in Paris, at the Hôpital Saint-Antoine, three cases of

beriberi in Chinese who had lived in Paris for at least six months, which excluded all possibility of an epidemic. These Chinese had continued to confine their diet to tea, sugar and decorticated white rice. On the other hand Mr. Pons, in the epidemics of beriberi that he observed in Indo-China, never noted cases of contagion. It appears to him that beriberi is due to a disequilibrium in alimentation between the protein and the mineral elements. A common error consists in confusing the polyneuritic syndrome and the disease itself. In reality, the polyneuritic syndrome is a complication of beriberi under the influence of a secondary cause. In many cases its cause is a contagious and epidemic infection, which gives to the polyneuritis observed in connection with beriberi a contagious aspect. Mr. Tanon distinguishes, in agreement with Funck, two forms of beriberi, just as one distinguishes two forms of pellagra, one due to avitaminosis and the other to intoxication. He recalled the researches carried out by Trabaud, Mornehed, Klata, Mouharrami and Chewket Pasha, on this last subject. Mr. Pons, who has studied the question carefully, says that it is possible for the two processes to be combined. In that case, the asthenogenic bacillus of Mr. Bernard would develop on a disturbed terrane and would complete by intoxication the symptomatology of beriberi.

International Congress on Biliary Lithiasis

The Congrès international de la lithiase biliaire, which will meet at Vichy, September 19, has adopted as its program the study of the following three topics: (1) the sequels of cholecystectomy; (2) the medical and hydromineral treatment of the gallbladder in biliary lithiasis, and (3) the lithiasic liver. The chief objective of the discussion will be the actual origin of biliary calculi, which has long been ascribed to an infection, whereas many observations show today that calculi may develop without the existence of an infection, and that they may arise not only in the bladder but also in the biliary canaliculi and even in the liver. These conceptions tend to destroy confidence in cholecystectomy, which surgeons perform extensively and as an early intervention, although often it does not prevent the continuation of the formation of calculi. The congress at Vichy, which will apparently be largely attended, is likely to result in some important discussions.

BERLIN

(From Our Regular Correspondent)

July 4, 1932.

A Superfluity of Scientific Societies

Like many other countries, Germany is suffering from a superfluity of scientific societies and scientific sessions. Many of the proposed sessions have been postponed because of the economic depression. But the number of special societies, following the limitations of the specialties, and also the boundaries of the provinces and other geographic systems, has not been reduced. Therefore, one of the oldest scientific societies in existence, the Gesellschaft Deutscher Naturforscher und Aerzte, has suggested the idea of forming a league of the German scientific and medical societies, the purpose being to rationalize the many scientific meetings announced in spite of the depression and to eliminate if possible the unpleasant irregularities of a temporal and material sort that seem constantly to arise under present conditions. In the second half of the year 1931, forced by the economic conditions, which affected physicians severely, a reduction in the number of congresses, sessions and meetings was sought (as was mentioned at the time in these letters); but this year there seems to be a tendency to accept conditions as they are and to adapt oneself to them in a most surprising manner. The economic depression has not lifted, and yet one finds few instances in which there has been a disposition to take account of these conditions by canceling or postponing or combining of previously announced sessions. And the attendance at these sessions, while not what it used to be, is still good. It must be, therefore, that there is an intensive "endogenous" desire or longing for a mutual exchange of ideas and for the instruction that results from such gatherings, so that the optimism of those who will not listen to a reduction in the number of congresses appears to prevail. While such enthusiasm is encouraging, a certain measure of restriction is nevertheless in order, and the action of the Gesellschaft Deutscher Naturforscher and Aerzte is praiseworthy. The constitutional assembly of the proposed league will be held this year at Wiesbaden-Mainz, in connection with the regular sessions of the society.

Relative Incidence of Sickness Among Men and Women

The results of comprehensive statistics on the relative incidence of sickness among men and women have been recently published by the federal bureau of statistics. The statistics cover the reports of 935 federally approved *krankenkassen*, with 2,500,000 insured members, on the number of cases of sickness and the number of days of illness occurring in the various age groups of the members, separated as to men and women, for the year 1930. There were 740,000 cases of sickness among the men and 359,000 cases among the women members, or 45.8 cases per hundred men and 40.7 cases per hundred women. In all age groups the incidence of sickness among the women was less than among the men. Both sexes presented the highest incidence of sickness between the ages 20 and 24 and between the ages 25 and 34. In the women, however, the incidence of sickness in these years, the principal years of childbirth, was 8.8 per cent above the general average, and in the men only 4.4 per cent. The cases of sickness among the women, after the height was reached in the age groups 20-24, declined rather steadily but with an interruption in the climacteric period between the ages 50 and 55. The men showed, however, between the ages 50 and 65, considerable increase in the incidence of sickness. A comparison of the records of men and women shows that in the younger age groups the amount of sickness is somewhat higher among the women than that in the older age groups, but from age 35 on it is unquestionably higher among the men. If allowance is made for the cases of sickness due to peculiar female functions, the danger from sickness, so far as sickness that renders the worker unfit to carry on is concerned, is much less among women than among men. Thus, on the whole, women are more frequently ill during the younger years and the men during the older years.

Psychopathic Aid Center

At a recent session of the Psychotherapeutische Gesellschaft, associated with several leagues of municipal welfare physicians, the city physician Dr. Röder, of the Berlin district Treptow, reported on the observations that had been made in the "open" psychopathic aid center founded seven years previously. The center comprises at present 422 persons, 14 of whom are children under 6 years of age, 331 school children and 77 juveniles. The treatment they receive consists only in the giving of suitable advice to the children. When they are improved, these children are promptly dismissed from the center, in order not to awaken in them the consciousness of being ill and not to make hypochondriacs of them. Of the genuinely psychopathic children, 44 per cent present serious mental defects. The child's family must be instructed as to his condition and as to how he should be treated. The child requires the application of special educational principles that necessitate a great amount of time, understanding and patience, although the excellent results secured amply repay such expenditure. Since the official personnel has been reduced to the lowest limits, it cannot carry out such treatment with the required detail, and it becomes necessary to enlist the services of trained volunteers, who work under the supervision of the directing specialists and have added greatly to the success of this type of aid. About 6 per

cent of the children may be classified under the most severe stage. It is strange that there are only fourteen children under 6 years of age at the center, when it is recalled that, according to scientific opinion, the origins of the pathologic condition extend back to earliest childhood. Therefore, for several months past, all children 3 years of age are examined as to possible mental defects, and all observations are reported to the center. If such an examination is made from year to year, and, in addition, the school health officers continue to watch for irregularities, it is impossible for a mentally defective child to escape detection for any length of time.

Administrative Technic in the Smaller Hospitals

The Berliner Dozenten-Vereinigung (association of university teachers) is planning, in collaboration with the Verwaltungs-Akademie Berlin, to organize, the coming fall, a course for physicians on the administrative technic of smaller hospitals. This course is intended mainly for the medical directors of the smaller hospitals and sanatoriums that have no separate administrator, the administrative duties lying entirely in the hands of the directing physician. Lectures will doubtless be provided on the hospital as an educational and postgraduate center; on the collection of funds for the administration of the hospital, with especial reference to the present economic depression; on the economic management of the hospital, and on the functioning and management of the financial department. Questions pertaining to personnel constitute an important part of the problem as a whole. Great importance is attached further to suggestions as to simplification of the business management, also on the situation of the nurses in the hospital, the question of the supplying of medicaments, the legal status of the hospital, the special equipment; and, finally, the important field of the relations of the physician to the patient, so far as legal questions are involved, will be discussed. This plan of holding such a four to five day course is deserving of general support.

Relation of Sick Benefit Associations to the Hospitals

As is well known, Germany has a system of social insurance that is extensively developed—in fact, in the opinion of many, it is developed far beyond the endurable limits. This opinion is shared not only by physicians and medical organizations but also by wide sections of the population, including employers and employees. The advantages of the sick benefit associations for the uplift of the poorer sections of the population is unquestioned. A detailed discussion of this phase of the problem is reserved until such time as the new provisions of the law pertaining to *krankenkasse* physicians, which is now in process of revision, have been published and subjected to careful scrutiny. For the present, attention is called to a single circumstance that shows the trend of events: between the federal league of private hospitals and care-taking institutions of Germany, the merger of the communal league for the promotion of public health and the leagues of the *krankenkassen*, an agreement has been reached that concedes to the *krankenkassen* a certain right of supervision over the hospitals. Thereby the duty of hospitals to give information concerning members of *krankenkassen* who are undergoing treatment is recognized, and, in some cases, the confidential physician of the *krankenkassen* is permitted to be present at the examination of the patient. This second demand can, to be sure, be refused by the attending physician; but, in that case, a third physician may be called in, at the expense of the *krankenkassen*, the parties concerned agreeing on the physician to be selected. Complaints of the *krankenkassen* about too long sojourns in the hospital are inquired into by the competent league of the syndicate. These are questions of prestige and finance that have to be settled. It is admitted, however, that the position of social insurance and of the *krankenkassen* is at present not just the best. From the medical point of view, this intervention, in spite of the fact that the medical representatives felt compelled to support it, is much to be regretted.

Number of Directing Physicians in Hospitals

According to recent statistics, there were in Germany, as of Jan. 1, 1932, 2,930 directing physicians out of a total of 50,000 physicians. Of these 2,930 directing physicians, 670 were above 60 years of age, while 88 were above 70. The largest number (455) belonged to the 56-60 age groups. There were 110 chief physicians who were licensed since 1923. It was significant that only 15 of these were in the large cities.

Petition by Lay Practitioners for Recognition

The *Deutsches Aerzteblatt*, the organ of the medical profession of Germany, publishes a petition of the Zentralverband der Heilkundigen Deutschlands (central league of lay practitioners of Germany), addressed to the government and legislature of one or more of the *länder* of Germany. The lay practitioners are seeking state recognition. It does not seem likely that their dreams will be realized in the near future; nevertheless it is necessary to take note of such aspirations, and it is quite in order that the petition of this league is printed in full. The petition furnished a shocking insight into the conceptions and the makeup of this organization of lay practitioners. In the Berlin letter of May 30 (THE JOURNAL, July 9, p. 145) the number of lay practitioners in Germany during the last two generations was given.

BUDAPEST

(From Our Regular Correspondent)

July 5, 1932.

The Annual Medical Week at Balatonfüred

The Medical Week, which is held annually at Balatonfüred, the picturesque bathing resort on the shore of Lake Balaton, was well attended this year, an unusual number of physicians, in view of the economic situation, being attracted by the interesting program and the entertainment offered by the management.

Prof. E. Neuber read a paper on the causes of complaints following gallstone operations. The cause of the complaints may be sought in the complications that accompany gallstone disease, which can be abolished with the removal of the stones in almost every case. Gallstones rarely recur after their operative removal. It is safe to say that once in a thousand instances postoperative complaints are in close connection with the operation itself; but this does not mean that these postoperative complaints are due to the formation of new stones. Complaints may be caused also by adhesions, which usually are not the result of the operation but are due to the original condition. Such adhesions impede the outflow of bile or, if they are located on the surface of the liver, may be an inconvenience to the respiratory movements.

The most serious postoperative inconvenience may be caused by inflammatory diseases of the gall ducts, which as complications of gallstones cannot be cured simultaneously with the removal of the stones. Most frequently they occur in those cases in which the gallstones have been present for years. In such instances operation alone will not suffice, the patient being obliged to observe a prescribed diet and regimen. If patients follow instructions closely, their complaints will cease shortly and they may follow their old manner of living.

Gallstone disease often goes hand in hand with gastric complaints. After operation the inconveniences caused by the gallstones cease, but the gastric complaints may persist. The complaints most frequently encountered are chiefly secretory disturbances and they present themselves as lack or diminution of acid formation. The question as to how the gastric secretion changes after operations for removing the gallbladder has not been satisfactorily answered. The opinion is that the extirpation of the gallbladder does not considerably influence

the secretory action of the gastric glands and therefore the removal of the gallbladder does not mean any great harm to the organism. The gastric complaints can be relieved by the prescription of drugs.

Postoperative complaints may be provoked also by hernias formed in the operative scar. These complaints, though infrequent, may be similar to those caused by the gallstones, particularly when the hernias contain intestine.

Professor Neuber analyzed postoperative complaints in many cases; searching for their causes, he came to the conclusion that only a small fraction of these can be brought in organic connection with the operation proper. Postoperative complaints teach the value of not delaying long after the diagnosis, particularly if the patient's condition is becoming worse, for with the delay not only is the operation rendered more difficult but the chances of postoperative complaints are increased.

Professor Verebelyi spoke about the importance of precarcinosis, by which term is meant changes, such as anomalies of development, chronic inflammation, granulation, hypertrophy, or tumor-like change, from which sources cancer forms so often as to exceed the percentage of casual coincidence. From the point of view of surgery, such skin changes do not present a problem because they are visible and therefore their change to cancer is noticeable at any time. The question is much more difficult with leukoplakia, which is often a precursor of cancer. The difficulty is still greater in precarcinosis of the internal organs.

Dr. George Bakács read a paper on the hormonal treatment of obesity. He reported two cases showing the results attainable in cases of regional obesity.

Dr. Ludwig von Pap spoke on arthralgia of endocrine origin. He said that endocrine arthralgia has four characteristic manifestations: tumescence, pain, rigidity and weakness.

ITALY

(From Our Regular Correspondent)

May 31, 1932.

Propaganda to Promote Consumption of Rice

Many Italian physicians are supporting a scientific movement for the revaluation of rice as to its alimentary and therapeutic properties. Thus, Professor Devoto of the Clinica del lavoro in Milan, Professor Micheli of the University of Turin and Professor Ferranini of the University of Naples have published articles setting forth the fields of alimentary hygiene in which an extensive use of rice, of which they give the physiologic and therapeutic characteristics, is indicated. In the Ospedale Maggiore at Vercelli, a series of scientific lectures on the subject was held. At this conference, Professor Rigobelli spoke on the relations between vitamins and ferments in general and in deficiency diseases, and with especial reference to the vitamins and the ferments of rice. Professor Issoglio discussed the biologic aspects of phosphorus, with especial reference to alimentation. Professor Camelli dealt with the possibility of replacing ordinary flours with corresponding preparations of rice in the alimentation of infants receiving an artificial diet.

The Appointment of Prof. Giunio Salvi

Prof. Giunio Salvi, who holds the chair of normal human anatomy, has been chosen rector of the University of Naples. Having entered young on a university career, he won by competitive examination, in 1901, a chair at Sassari, whence, in 1909, he removed to Parma, and, in 1919, after having served in the war as a medical officer, he accepted a chair at the University of Naples. His studies on the morphology of the blood vessels and the muscles and his embryologic research on the development of the intestine are well known. A method of craniocerebral topography which he studied for years and which was completed recently with radiologic research bears the name of Professor Salvi; it ranks high along with the best foreign treatises on the subject. Professor Salvi is the author also of a treatise on descriptive anatomy and of another on topographic anatomy.

Notification of Birth of Deformed Infants

The head of the government has presented to the senate the draft of a law pertaining to compulsory notification of the birth of deformed infants, including lesions of a permanent nature observed in the new-born that have caused or that may cause a partial or total incapacity for work. If this law as drafted is adopted, it will be incumbent on all physicians and midwives to notify the communal and the health authorities whenever they observe the birth of a deformed child.

VIENNA

(From Our Regular Correspondent)

June 15, 1932.

Blood Transfusion in Sepsis

In a series of addresses before the Vienna Medizinisches Doktoren Collegium, Prof. Dr. Falta discussed the problem of blood transfusion in sepsis. The indications for this intervention have been extended in recent years. In two classes of disease, blood transfusion has been found to be especially valuable: (1) in the various forms of anemia and (2) in infectious diseases. To the first group belong anemia resulting from hemorrhages due to injuries, childbirth, ulcers, shock, anemia associated with chronic hemorrhages (as in hemorrhoids, hemophilia, hemorrhagic diathesis), and the secondary anemias associated with disturbances of nutrition and intoxications, pernicious anemia and conditions attending hemolytic icterus. The second large group comprises the infectious diseases and septic conditions. The effects of blood transfusion in these various diseases are not uniform. In the case of severe hemorrhage, transfusion constitutes "substitution therapy," since the freshly introduced blood takes over the function of that which was lost. In addition, the transfusion constitutes a stimulation of the hematopoietic areas. Only a few hours after the intervention, reticulocytes appear in the blood. In infectious diseases and in sepsis, transfusion promotes not only the new production of blood corpuscles but also the formation of immune bodies in the reticulo-endothelial system. In severe cases of sepsis, this is especially important, because here the whole system is flooded or "blocked" by bacteria and may be seriously damaged by the endotoxins. Thereby its phagocytic and immunizing activity is impaired. The intake of healthy, bacteria-free blood cleanses, so to speak, the reticulo-endothelial system and thus restores its function. In cases in which no benefit appears to be derived from a simple transfusion, one can resort to a peculiar intervention. One can have the donor develop immune bodies. With the bacterial strain derived from the sepsis patient, a vaccine is prepared and with this vaccine the donor is immunized, and then the blood of the donor thus laden with immune bodies is transfused. In Vienna, the direct method of blood transfusion is the one most commonly employed. The citrate method is being discarded more and more. In case it is desired to use a vaccinated donor several times, one must not take at one time more than about 250 cc., otherwise the donor may suffer injury.

Decline in Tuberculosis Mortality in Vienna

The decline in the mortality of tuberculosis is a fact in all civilized countries. The downward trend has been observed for about forty years, but the rate of the decline has varied with the cultural level of each country. The years 1914-1918 brought, however, a reversal, which has affected two decades. But, in 1920, an improvement in conditions was again noticed, and the change was so rapid that in 1922 the level of 1913 was attained. The decline in tuberculosis mortality was now more rapid than the increase during the war period. The decline has been constant since 1922. Neither the epidemiologists nor the

statisticians foresaw such a rapid decline; nor have they been able to give a satisfactory explanation of it. One thing, however, has been established—namely, that tuberculosis is more frequent, the poorer the population of a given area is. Tuberculosis declines as prosperity increases. Prosperity results in less overwork, better homes, better food, more recreation, better protection against colds and infections, and better care during illness and convalescence. But all these factors do not suffice to explain the sharp decline in the frequency of tuberculosis. Not all age groups show a like reduction of mortality. In an article recently published by Dr. S. Peller in the *Arbeiterschutz* will be found some instructive figures on the subject. The mortality for Vienna has been carefully studied, and it has been noted that the age groups above 60 do not ordinarily show much improvement—among either the women or the men. The figures in these groups remain more or less constant:

Deaths from Tuberculosis in Various Age Groups per 10,000 Deaths in General

Age Group	Men				Women			
	1913	1920	1923	1929	1913	1920	1923	1929
0–1	69	88	..	31	51	60	47	34
1–5	47	68	30	24	45	66	26	25
15–30	22	34	22	11	27	40	27	21
30–40	41	43	28	25	28	31	18	11
60–70	50	74	56	32	31	58	25	16
Above 70	47	60	77	47	31	69	38	31

It will be observed that among women of the 15-30 age groups there are more deaths than among the men; therefore, women require special protection during this period. This is also taken account of in social legislation. Further, the pregnant worker is protected by lengthening of the "protected period," without loss of wages. It appears that now tuberculosis claims fewer victims belonging to the 30-60 age groups than formerly. Dr. Peller makes a demand that social legislation and prophylactic medicine shall endeavor to aid the age groups that are at present particularly menaced—namely, the women aged 15 to 30—in the struggle against tuberculosis, in order that also these age groups may be brought within the constantly declining curve of mortality. The prevailing low economic level of industrial conditions, which have characterized the past two years or more, will doubtless bring a reversal in the heretofore favorable development.

RIO DE JANEIRO

(From Our Regular Correspondent)

June 15, 1932.

Nephrolithiasis

Dr. R. Josetti recently reported before the Academia Nacional de Medicina of Rio de Janeiro a case of silent giant calculus of the kidney. He took occasion to discuss the indications and contraindications for operation in renal calculi, dividing the entire group of calculi of the kidney into four subgroups. The first subgroup comprises the type of silent benign calculi, which occurs frequently. Operation in cases of this type is not indicated since the patients do not suffer in any way and the presence of calculi is found only through roentgenologic examination. The second subgroup comprises calculi which produce such grave symptoms as colic, hematuria or pyuria and sometimes even endanger the life of the patient, from complications, such as acute anuria or generalized septicemia originating in the infectious pyelitic focus. In this type operation is always indicated. The third subgroup is represented by certain cases in which, in spite of grave symptoms, operation is contraindicated because of renal insufficiency, the general condition of the patient, or the presence of complications such as diabetes, tuberculosis, cancer, cardiorenal sclerosis or similar conditions. In these cases a functional test of the kidney reveals that the elimination of phenolsulphonphthalein is poor. The most simple operation in these cases, even a pyelotomy, may endanger the patient. The fourth subgroup comprises certain cases belonging either to the benign or to the malignant forms in which operation should be carefully considered from the very beginning until a decision is reached.

Disseminated Leukoderma in Secondary Syphilis

Dr. J. Ramos e Silva, head of the Department of Dermatology of the Policlinica Geral of Rio de Janeiro, recently reported a case of disseminated leukoderma in secondary syphilis. The patient, aged 18, in whom the presence of secondary syphilis was proved by the appearance of hypertrophic mucous plaques in the vulva and by a positive Wassermann reaction, presented round, achromic maculae, about 1 mg. in size, without hyperchromic edges and with a central area of normal pigmentation, disseminated on the skin. Under treatment with bismuth compounds this dermatosis had a slow regression until it completely disappeared. This type of dermatosis may be considered as leukoderma of syphilitic origin which probably followed the development of a benign syphilitic roseola that passed unobserved and was due to the action of spirochetal toxins together with influences of other pathogenic processes on the cells of the stratum germinativum epidermidis.

"Rickettsia Brasiliensis" in Exanthematous Typhus

Dr. J. Lemos Monteiro read a paper, recently, before the Academia Nacional de Medicina of Rio de Janeiro, on the results of his experiments to ascertain the etiologic relationship of Rickettsia brasiliensis with the exanthematic typhus of São Paulo. He studied the infectiousness of the organism and its antigenic power in experimental infections and concluded that Rickettsia brasiliensis, which has been frequently isolated in the exanthematic typhus of São Paulo, represents either the etiologic agent or one of the phases of the virus of this type of typhus. After the inoculation of the virus into the peritoneum of the guinea-pig, the Rickettsia bodies may be identified from the mesothelial cells of the peritoneal walls. Rickettsia isolated from the peritoneum of the guinea-pig, has pathogenic properties which enable the organism to bring about characteristic experimental infection when freed from the virus through lavage and centrifugation. By means of a vaccine prepared from Rickettsia, isolated from the peritoneum of the guinea-pig and freed from the virus, active immunization may be given to the guinea-pigs, and when the vaccine is given to animals already immunized it provokes the formation of antibodies.

BELGIUM

(From Our Regular Correspondent)

July 6, 1932.

The Fogs of the Meuse Valley

Recent bulletins of the Academy of Medicine of Belgium contain the results of research undertaken for the purpose of identifying the causes of the fatal accidents occurring in the Meuse Valley during the fog of December, 1930. In addition to the tracheobronchopulmonary irritation that all the patients manifested, a large number showed signs of laryngeal irritation with modification of the tone of the voice; others manifested signs of nausea, and in some instances vomiting. There were no diarrhea, no neuritis or albuminuria, and no sensory disorders. The necropsies showed no evidence of recent structural changes in the viscera, particularly on the part of the liver and the kidneys, organs frequently attacked by diffuse massive intoxications. One can only point out the presence in the pulmonary alveoli of fine black granulations that did not give the microchemical reactions of iron, either free in the alveolar cavities or engulfed by the polymorphonuclear leukocytes. The spectroscopic analyses of the blood were negative for methemoglobin, sulphemoglobin and sulphmethemoglobin. The toxicologic tests were likewise negative, which does not exclude the intervention of a toxic substance in the

fogs. It may be assumed that the toxin had not penetrated the blood and the viscera in sufficient quantity to be detected.

From the first to the fifth of December, 1930, the meteorological situation in Belgium was characterized by high atmospheric pressures and light easterly winds. This situation favored the mixture of harmful products, gases and impurities of all kinds, derived from the smoke of industrial factories and others. There were in the layers of air next to the ground extremely minute particles, solid or liquid, measuring from 1 to 5 microns, moving at a slow speed, which made them more easily respirable.

As no samples of air were taken during the fogs that occurred between December 1 and 5, the members of the commission of inquiry paid a visit to the various factories of the surrounding country and prepared a list of thirty substances that might have been thrown into the air. What substances are most likely to have caused the symptoms observed? One can eliminate carbon dioxide, carbon monoxide, hydrogen, hydrogen sulphide, arsine, acetylene, hydrocarbons, particles of tar, and phenol. One may retain ammonia and the ammoniacal vapors, the nitrous and nitric vapors, sulphur trioxide and its oxidation products, hydrofluoric acid, hydrochloric acid, alkaline fluorides, possibly the dusts of zinc oxide, iron oxide, lime, cement and soot, together with all the dusts of metals. To sum up, it appears that one of the following substances must be incriminated: sulphur trioxide and its oxidation products, hydrofluoric acid, nitrous vapors, ammoniacal vapors, and hydrochloric acid.

Arguments have been adduced to incriminate sulphurated substances, in the form either of sulphur dioxide or of sulphuric acid. All or part of the sulphur dioxide was adsorbed by the particles of soot coming from the factory chimneys, which explains why it required nearly three days for these to be deposited on the ground, and also the increase of harmful products the third day of the fog. This explanation is the only one that appears to be in complete accord with the medical, toxicological, meteorological and chemical observations, and to which no serious objections have been raised.

The problem of pollution of the atmosphere is of great importance, therefore, and suitable preventive measures should be adopted to guard against a repetition of similar catastrophes.

Marriages

WILLIAM B. BROCK, Oakville, Iowa, to Mrs. Enid Joan Sprinkle of Kansas City, at Blue Springs, Mo., June 5.

GEORGE SHORKLEY, Mount Vernon, Wash., to Miss Sara Merriman Dyer of Boulton, Mass., June 6.

GEORGE STUART ENFIELD, Bedford, Pa., to Miss Rowena Ewing Allmond of Los Angeles, June 19.

EMIL O. MUHS, Vermilion, S. D., to Miss Marie M. Buettner of Burlington, Iowa, June 15.

RUSL PARKER NOBLE, Norway, Iowa, to Miss Louise Ada Watson of Cedar Rapids, June 4.

JOHN JAIRUS BERNHARD, Allentown, Pa., to Miss Hilda Susan Miller of Bangor, June 11.

MARGARET A. TELFER, Bloomington, Ind., to Mr. A. M. Owen of Evansville, in June.

RUSSELL J. SPIVEY, Thorntown, Ind., to Miss Dorothy Margaret Ryker, recently.

THOMAS PARKE, Philadelphia, to Miss Caroline Lippincott Hoopes of Paoli, June 18.

AUSTIN W. HOLMAN to Mrs. Harriett Tullis, both of Circleville, Ohio, recently.

MATTHEW J. SEVERIN, Omaha, to Miss Irene Stafford of Bancroft, Neb., May 17.

EARL H. DE SHAW, Monticello, Iowa, to Miss Selma Prahm of Wyoming, June 11.

RONALD L. JARDINE, Williamsport, Pa., to Mrs. Anne W. Mitchell, May 21.

CLIFFORD C. TAYLOR, Thorntown, Ind., to Miss Marjorie Kes, recently.

Deaths

Edward Carrington Stanard Taliaferro ⊕ Norfolk, Va.; Medical College of Virginia, Richmond, 1898; member of the House of Delegates of the American Medical Association, 1925, 1927, 1930 and 1931; fellow of the American College of Surgeons; past president of the Medical Society of Virginia and the Norfolk County Medical Society; captain in the medical corps of the State Militia for eight years; gynecologist to the Memorial Hospital, the Hospital of St. Vincent De Paul and the Norfolk Protestant Hospital; aged 57; died, July 28, of complications following an operation for appendicitis.

William Alfred Kickland ⊕ Fort Collins, Colo.; University of Michigan Medical School, Ann Arbor, 1895; past president of the Colorado State Medical Society; fellow of the American College of Surgeons; served during the World War; surgeon to the Bartz Memorial Hospital, Windsor; aged 64; died, in July, at St. Joseph's Hospital, Denver, of septicemia.

Hugh Karr Davis, Sonestown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the Medical Society of the State of Pennsylvania; formerly county coroner; on the staff of the Muncy (Pa.) Private Hospital; aged 45; died, June 21, at the Robert Packer Hospital, Sayre, of malignant hypertension and subacute nephritis.

Charles L. Tucker, Griffin, Ga.; Southern Medical College, Atlanta, 1892; member of the Medical Association of Georgia; past president of the Spalding County Medical Society; aged 61; died, June 29, at the R. F. Strickland and Son Memorial Hospital, of carbolic acid poisoning, self-administered.

Edward Gove Randall, Waterville, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1898; served during the World War; member of the board of education, and for many years health officer; formerly on the staff of the Utica (N. Y.) Memorial Hospital; aged 60; died, July 4, of arthritis.

Henry Embry McMurray, Tampa, Fla.; North Carolina Medical College, Charlotte, 1908; Tulane University of Louisiana School of Medicine, New Orleans, 1913; member of the Florida Medical Association; on the staffs of the Children's Home, and the Tampa Municipal Hospital; aged 50; died, July 4.

Christopher Balthus Preston, Ashland, Ky.; College of Physicians and Surgeons, Baltimore, 1907; past president of the Boyd County Medical Society; formerly on the staff of the King's Daughters' Hospital; aged 50; died, June 2, in a hospital at Charleston, W. Va., of carcinoma of the pancreas.

Woodard Davis Beacham, Hattiesburg, Miss.; Medical Department of the University of Louisiana, New Orleans, 1899; member of the Mississippi State Medical Association; for nine years health officer of Forrest County; aged 57; died, June 23, of heart disease and pneumonia.

Sidney Stetson Carruth, Boston; University of Vermont College of Medicine, Burlington, 1893; member of the Massachusetts Medical Society; aged 61; died in June at the Peter Bent Brigham Hospital, of chronic myocarditis, cerebral hemorrhage and bronchopneumonia.

Roy Ennis Wolfe ⊕ Rocky Ford, Colo.; Chicago Homeopathic Medical College, 1901; past president of the Otero County Medical Society; aged 54; died, July 4, in the Physicians' Hospital, of streptomeningitis following an infection of the middle ear.

Mary Elizabeth Hanks ⊕ Chicago; Boston University School of Medicine, 1897; past president of the Chicago Council of Medical Women; member of the Radiological Society of North America; aged 70; died, July 17, of myocarditis and angina pectoris.

William Wilson, Akron, Ohio; Cleveland Homeopathic Medical College, 1899; Pulte Medical College, Homeopathic, Cincinnati, 1900; member of the Ohio State Medical Association; aged 71; died, June 2, in the City Hospital, of coronary thrombosis.

Guerdon Conde Buck ⊕ Platteville, Wis.; Cornell University Medical College, New York, 1900; past president of the Grant County Medical Society; physician in charge of a hospital bearing his name; aged 58; died, June 20, of heart disease.

Arthur Peter Smyth, Youngstown, Ohio; University and Bellevue Hospital Medical College, 1907; member of the Ohio State Medical Association; for many years on the staff of St. Elizabeth's Hospital; aged 49; died, July 10, of carcinoma.

Charles B. Kibler, Corry, Pa.; University of Buffalo School of Medicine, 1870; member of the Medical Society of the State of Pennsylvania; formerly on the staff of the Corry Hospital; aged 74; died, May 6, of hypostatic pneumonia.

Charles Haskins Reagan, Beeville, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1892; member of the State Medical Association of Texas; aged 69; died in June, of myocarditis.

George Edwin Bush, Geneseo, Kan.; College of Physicians and Surgeons, Baltimore, 1888; member of the Kansas Medical Society; aged 67; died, June 21, in the Ellsworth (Kan.) Hospital, of strangulated umbilical hernia.

Lawrence Letton Smith, Bethel, Mo.; Barnes Medical College, St. Louis, 1899; member of the Missouri State Medical Association; formerly bank president; aged 64; died suddenly, July 4, of cerebral hemorrhage.

Frederick Chester Chadwick, San Francisco; Cooper Medical College, San Francisco, 1904; aged 59; died, May 24, in the Franklin Hospital, of chronic interstitial nephritis, endocarditis and hypostatic pneumonia.

James Wilson ✠ Wabash, Ind.; Bellevue Hospital Medical College, New York, 1890; veteran of the Spanish-American War; formerly mayor of Wabash; aged 66; was found dead in bed, July 1, of heart disease.

John Patrick Wright, New York; University of the City of New York Medical Department, 1893; aged 69; died, May 24, in the Los Angeles County (Calif.) General Hospital, of arteriosclerosis and myocarditis.

Benjamin Meyers Yost, Linden, Pa.; Jefferson Medical College of Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; aged 81; died, April 20, of chronic endocarditis and myocarditis.

Henry Hubbard Peachey, New York; Medical College of Ohio, Cincinnati, 1889; aged 63; died, July 19, at the home of his sister in Cincinnati, of arteriosclerosis, diabetes mellitus and dilatation of the heart.

John M. McCully, Clarence, Mo.; St. Louis Medical College, 1873; for twelve years member of the school board of Shelbina; aged 81; died, June 16, in a hospital at Shelbina, of prostatitis and cystitis.

Henry Harrison Merriman, Applegate, Mich.; Kentucky School of Medicine, Louisville, 1894; served during the World War; aged 67; was found dead, July 2, in his garage, of carbon monoxide poisoning.

Walter Cox Alexander, New York; Georgetown University School of Medicine, Washington, D. C., 1930; aged 25; intern, St. Vincent's Hospital, where he died, June 16, of ulcerative colitis.

George Harvey Morrison ✠ Whitefield, N. H.; Hahnemann Medical College of Philadelphia, 1881; medical superintendent of the Morrison Hospital; aged 77; died, May 27, of hematemesis.

Daniel Baldwin Wylie, Salinas, Calif.; College of Physicians and Surgeons, Chicago, 1888; member of the California Medical Association; aged 70; died, May 21, of a self inflicted bullet wound.

David V. Reinoehl ✠ Erie, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; on the staff of St. Vincent's Hospital; aged 59; died, June 16, of cerebral hemorrhage.

Charles John Richards, Tonopah, Nev.; M.R.C.S., and L.R.C.P., London, 1891; College of Physicians and Surgeons of San Francisco, 1906; aged 62; died, May 15, of senile dementia.

John Henry Byrne, Evanston, Ill.; Rush Medical College, Chicago, 1874; aged 91; died, June 23, in the Psychopathic Hospital, Chicago, of senile dementia and chronic myocarditis.

Clinton E. Spicer, Long Beach, Calif.; Rush Medical College, Chicago, 1903; past president of the North Dakota State Medical Association; aged 62; died, July 1, of pulmonary edema.

George G. Melvin, Fredericton, N. B., Canada; Bellevue Hospital Medical College, 1887; chief medical health officer; aged 71; died, May 12, in Oakland, Calif.

Jay Thomas Wood, Springfield, Ill.; College of Physicians and Surgeons, Chicago, 1907; served during the World War; aged 48; died, June 11.

Thomas Lee Van Giesen, Watsonville, Calif.; University of Pittsburgh School of Medicine, 1896; aged 56; died, July 11, of endarteritis obliterans.

James M. Sanders, Eckerty, Ind. (licensed, Indiana, 1904); aged 82; died, June 26, of heart disease.

Bureau of Investigation

"RAY-X WATER—LIQUID SUNSHINE"

Another Attempt to Make a "Patent Medicine" Out of Drinking Water

Many people drink too little water. If they could be persuaded to drink more water, their health would be improved and many minor indispositions ameliorated or removed. Quacks, faddists and others are familiar with this fact and capitalize it by putting on the market drinking water that is alleged to have been subjected to some mysterious hocus-pocus that has endowed it with health-giving properties that would have intrigued Ponce de León. Such waters are always sold at a high price and those who purchase them drink them with a regularity and insistence bordering on a religious rite. It is not surprising that many such people, whose liquid intake has previously been below that which it should have been, find their general health improved.

SCIENCE
Finds a Way

Locating and treating disease with the New Super-Radionic Instrument

The Radiatoximeter

It is positive in its findings without asking any questions. No guess work — positive.

Phone or write to the doctor nearest you — using this equipment.

Blankmeyer Radionic Corp.

333 Twentieth Street
Phone Adams 9328 for further information
A Toledo Product

—DIABETES—
NATIONAL PATHOLOGICAL LABORATORY OF DETROIT
REPORTS SHOW EXCELLENT RESULTS
If You Are Suffering With Diabetes
We Have News of Interest to You
CALL OR WRITE RAY-X 333 20TH STREET

Reproductions (reduced) of two advertisements in Toledo papers: One of the "Radiatoximeter" at 333 Twentieth St., Toledo, and one of Ray-X Water, also at 333 Twentieth St., Toledo. The use of the name of the National Pathological Laboratory of Detroit in the lower advertisement was wholly unjustified. Apparently the only possible connection was that Dr. Robert A. Davis had sent some patients with diabetes (or glycosuria) to the laboratory for blood and urinary tests.

One of the latest "patent medicines" of this type is called "Ray-X Water—Liquid Sunshine." The stuff is put out by the Ray-X Water Corporation, 333 Twentieth Street, Toledo, Ohio. The Ray-X Water Corporation is at the same address and has the same telephone number as an outfit known as the Blankmeyer Radionic Corporation, which puts out a fantastic piece of electro-medical hokum called the "Radiatoximeter." This device is described as the "New Super-Radionic Instrument" that will locate and treat disease without asking any questions and is positive in its findings!

The Ray-X Water Corporation has for its president one A. R. Hartzog and for its vice president and secretary, E. E. Blankmeyer.

From a report of the Toledo Better Business Bureau, it appears that A. R. Hartzog is Arley R. Hartzog, an unlicensed chiropractor who has been in the courts at various times for

violation of the medical practice act of the state. E. E. Blankmeyer, the vice president and secretary of the Ray-X Water Corporation, is reported to be also vice president and secretary of the Blankmeyer Radionic Corporation, a concern which has claimed to have reduced the diagnosis and treatment of disease to a mechanical certainty.

It appears that Hartzog has mailed form-letters to laymen, inviting them to come to a "radionic clinic" for a "free examination." A Mr. I——, who responded to the invitation, reports: He was examined on the "radionic" machine and was told that he had "spinal catarrh," that there were 41 units of poison in his system and that 45 units is all that any one could stand and still live, that he had 12 units of inflammation in his system, that his vitality was down to 69 when it should have been 85, and that he had trouble with his bladder and kidneys! He was then told that if he wanted to take "treatments," it would cost him $4 a "treatment" or $12.50 a week. Being sufficiently impressed he went back, at which time Hartzog placed him in a chair and gave him a "radionic" machine "treatment." Mr. I—— continued to take treatments for seven weeks, paying altogether $87.50. Then, for seven weeks more, he continued to take other treatments by Hartzog, the radionic hokum being alternated with chiropractic treatments. Mr. I—— further declares that during the fourteen weeks, another alleged doctor, also an unlicensed chiropractor, gave him rectal injections and "electric bulb treatments." In closing his report, Mr. I—— says that he has "noted no improvement whatsoever in his physical condition" and that he "feels worse than he did in the beginning"—which is hardly to be wondered at!

During the past six or eight months, the Bureau of Investigation has received a number of inquiries regarding Ray-X Water, of which the following are examples. A Massachusetts physician wrote:

"Can you tell me anything about a Ray-X Water, being distributed from 333 Twentieth Street, Toledo? A friend has asked me about it and as I have never even heard of it, I am curious to know what, if any, value it may have."

This from a Better Business Bureau in Connecticut:

"We understand that Ray-X Water, sold by Ray-X Sales Inc., of Toledo, Ohio, are contemplating opening a sales branch locally. Any information that you can give us will be appreciated."

From the social service department of a university in Indiana this inquiry came:

"An acquaintance of mine has been persuaded to purchase a case of Ray-X Water, to be used in the treatment of diabetes. The usual sales talk has been so convincing to the patient that I am turning to your association as an authoritative body for an opinion in this matter. May I ask whether you are acquainted with this 'Liquid Sunshine'? Has it, to your knowledge, been analyzed? Has there been any action, legal or professional, to prevent the sale of this or to expose the truth in the matter?"

The secretary of the state board of health of a mid-western state wrote:

"I wonder if you have any information concerning the Ray-X Company of Toledo, Ohio. My attention was directed to this company today through an inquiry from a citizen of this state. This citizen has a daughter, ten years old, with diabetes and now under the care of a physician. Representatives of the Ray-X Company called upon this citizen at his office, told him of the wonderful cures of diabetes effected by Ray-X Water and offered to furnish a sufficient supply of the water for test under an agreement that if the case was not cured, there would be no obligation for payment. He was informed that Ray-X Water is a water highly charged with ultraviolet ray and that it effects a cure by destroying the streptococcus which causes diabetes. This is the first direct contact I have had with this company. From the account given by the citizen, there seems to be all the ear marks of commercialized exploitation. Please advise, giving any information you may have concerning this company."

An Indiana physician has written:

"Can you furnish me with information regarding Ray-X Water, manufactured by a Doctor Davis in Toledo, Ohio? Are there any curative properties attributed to it? Are there any harmful ingredients in it? Can any harm result in taking it over a period of time? How is it made? Is Doctor Davis in good standing regarding the A. M. A., and in his state and county societies? Is Ray-X water anti-streptococcus, as they claim? An immediate answer would be greatly appreciated."

The only element of medical respectability in the Ray-X Water exploitation seems to be the name of Dr. Robert A. Davis of Highland Park (Detroit), Mich. Doctor Davis has been advertised as "The Head of the Medical Department of the Ray-X Corporation" and testimonials by Doctor Davis are used as part of the advertising come-on.

According to the records, Doctor Davis was born in 1864 and, when he was forty-two years of age, was graduated in medicine by the University of Illinois College of Medicine. He was licensed in Michigan in 1909. He is a member of the Wayne County (Detroit) Medical Society and, through that, has qualified as a Fellow of the American Medical Association.

When the Ray-X Water exploitation was first brought to the attention of the Bureau of Investigation, a letter was written to Doctor Davis, asking him if there were any truth in the claims that had been made, that he had expressed a favorable opinion of this nostrum. In reply, Doctor Davis wrote a long letter detailing certain cases of individuals whom he believed had been benefited or cured by the administration of Ray-XWater. No controls were given and the clinical reports were of such a character that, scientifically, they were worthless. On the question of secrecy of composition of Ray-X Water, Doctor Davis wrote:

"In your letters, you seem to place special emphasis upon the word 'nostrum.' The word simply means a secret remedy or patent medicine. That definition does not apply to the remedy in question, since I know the method of its manufacture. If the word had a wider meaning and could be defined as a remedy with little or no therapeutic value, then many of the non-secret remedies would come under that heading and could be placed upon the scrap heap where they belong.

"I intend to continue my studies of this remedy. I know positively that it is a new thought in medical therapeutics. When such a mass of evidence can be produced that will prove that the remedy has the merit that I think it has, then the method of its manufacture will be revealed, provided the company who has the right to manufacture it is thoroughly protected. Any ridicule that may be heaped upon me during this investigation will not worry me in the least. I will consider its source. I am thoroughly conscientious in this matter."

From this it will be seen that Doctor Davis admits that he is using Ray-X Water and in addition is also acting as the head of the "Medical Department" for a company that is making money out of the exploitation of this secret preparation and he (Doctor Davis) does not intend that the medical profession or the public shall share this secret until he has accumulated a "mass of evidence" that will prove that the remedy has the merit that he thinks it has.

The only information given in the printed matter regarding the composition of Ray-X is:

"Ray-X is 100% Pure distilled water subjected to a very powerful series of RAY treatments. These treatments besides making it absolutely free from all impurities; impregnates it with certain properties and retains them in solution."

In another leaflet we read:

"Its base is 100% pure Water, scientifically known as H_2O. . . . It is subjected to a series of powerful and penetrating Ray treatments."

In answer to a letter written to the Ray-X Water Corporation, asking for information regarding the exact nature of the "rays" to which the water was said to be exposed, this reply came:

"In the first place, the water is H_2O, absolutely pure. It is treated by a series of light rays and, for this reason, we call it 'Liquid Sunshine.'

"You perhaps know somewhat of the work being done by Dr. Stienbach [sic!] at the University of Wisconsin with food. His method of treating foods for cattle is similar to our treating water for human beings.

"This water is 100 per cent pure, but our treating it as we do brings wonderful relief to those suffering with stomach and bowel troubles and is a wonderful remedy for the elimination of streptococcus infection."

In some of the advertising, one sees the influence of the "radionic" hocus-pocus with which the exploiters of Ray-X Water are so closely tied up. Thus, in describing the action of Ray-X Water, we read:

"It is an efficient aid in detoxilating and purifying the system, normalizing the organs and *stimulating vibrations.*" [Italics ours.—ED.]

The advertising is of a type common to that of "patent medicines." In spirit it is claimed that the product will cure almost any ill to which the human body may be subject; in letter, however, it is denied that the product has any curative qualities! Thus:

"We make no claims as to any curative powers in any given case."

Then, the advertising goes on to state that Ray-X has been known, tried and proved over a period of five years, that they

have testimonials by the hundreds, that tests are being carried on daily under medical supervision, and that it appears:

Mrs. C. was cured of intestinal tuberculosis following the use of Ray-X Water.

Mrs. H. was cured of chronic arthritis.

Mr. B. was cured of acute arthritis.

Mrs. X was cured of septicemia following childbirth.

Mrs. S. was cured of diabetes.

Mrs. M. was cured of streptococcus infection and anemia.

And so it goes! Some of the more elaborate advertising consists of alleged testimonial letters written by grateful patients. One of these letters purports to be from one John H. Sisson, who wrote that for fourteen years he had been in pain and agony and had been to various hospitals, such as the Walter Reed General Hospital, the Waukesha General Hospital, the Dayton Military Home and the Marine Hospital, and that he had been examined by about seventy-five doctors. Then, after all these authorities had told Mr. Sisson that nothing could be done, he saw an advertisement in the Toledo *Blade* of the "Radiatoximeter," made by the Blankmeyer Radionic Corporation of Toledo. Mr. Sisson then had his complicated case analyzed by this "super-radionic instrument," which is positive in its findings and asks no questions, and the suggestion was made that he use Ray-X Water. Then, as he states in his letter, although he had suffered pain and agony for years, had lost the use of his arms and legs and was also going blind, after using Ray-X for a month he was free from pain and suffering and felt a hundred per cent better!

This would indicate a very pretty tie-up. A man suffering from some chronic condition is persuaded through a newspaper advertisement to have his condition diagnosed by a preposterous piece of mechanical quackery known as the Radiatoximeter. He is then passed on to the exploiters of Ray-X Water, who share the offices of the Radiatoximeter outfit.

Correspondence

"ANESTHETICS: THEIR RELATIVE VALUES AND DANGERS"

To the Editor: — In THE JOURNAL, June 18, page 2234, appears a review of Dr. Albert H. Miller's "Anesthetics: Their Relative Values and Dangers," in which the author of the essay and the trustees of the Fiske Fund are criticized. This essay fulfils a want; it was compiled from a wide survey of the literature. From the author's large personal and practical experience, weight should be attached to whatever he may write. He has specialized exclusively in anesthesia for over twenty years and is at the present time chief or consulting anesthetist of some of the leading hospitals in Providence. From 1909 to 1925, THE JOURNAL published nine of his papers on anesthesia. This monograph can be recommended to any one on account of the large factual material, with over a hundred references to important fundamentals mentioned in the text. His views on the statistics of anesthesia are especially valuable:

> "The simplest method for determining the relative danger from the various anesthetics would seem to be the collection of results from the records of hospitals and municipal bureaus. These statistics, however, are often disappointing. Many of the deaths which occur under anesthesia are never reported in available form. If we could learn the entire list of anesthetic fatalities, we would still lack an accurate estimate of the entire number of administrations. From lack of a standard as to what constitutes death from an anesthetic, comparative statistics of the safety of anesthetics are often misleading. While statistics are subject to the elements of inaccuracy noted, a collection of great numbers of such figures is of value in determining the comparative safety of the anesthetic agents."

Then follow many statistical tables. He remarks on these statistics "in the preceding pages an answer is given to the question of the values and dangers of the anesthetic agents. *The answer will have different interpretations depending on personal experience and training.*" The statement by the critic that "there are approximately 100 ether explosions a year (unreported)" is questionable. Where did the critic get these statistics? Explosions with ethylene should be given prominence because, first, they are avoidable and, secondly, they are most dangerous. Ethylene *has* a rather "foul odor" and for this reason is usually preceded by nitrous oxide to unconsciousness, when ethylene is substituted. The unknown critic seems hurt because the odor of ethylene is called "foul" and ethylene explosions are mentioned. Some hospitals will not allow ethylene to be used for fear of explosions. Personally I would like to see it used in every hospital and by every dentist using general anesthesia, but because I differ with Miller on this point is not a good reason for condemning unqualifiedly an unusually good article on anesthesia.

JAMES T. GWATHMEY, M.D., New York.

SODIUM THIOCYANATE (RHODANATE) IN NARCOTIC ADDICTION

To the Editor:—In THE JOURNAL, July 2, there appeared on page 56 a communication signed by the Special Narcotic Committee of the Tompkins County Medical Society of Ithaca, N. Y. According to this communication there appears to be little basis for the widely published claims of Prof. Wilder D. Bancroft, of Cornell University, and his colleagues concerning the use of sodium thiocyanate (rhodanate) in narcotic addiction. The writers make no attempts to judge the experimental basis for Bancroft's therapeutic claims, merely stating "that the hypothesis concerning the action of sodium rhodanate on nervous tissue colloids is worthy of consideration and that the drug may have some merit, the members of the medical society would be foolish to deny." In view of the wide publicity which Bancroft's experiments have received and the dangers involved in permitting this publicity to grow, unchallenged, it might be worth while to review briefly the history of this work and to examine critically some of the basic experiments involved.

The use of sodium thiocyanate by Bancroft and his associates in drug addiction and certain forms of insanity is based on experiments of Bancroft and Rutzler (Bancroft, W. D. and Rutzler, J. E., Jr.: The Denaturation of Albumin, *J. Phys. Chem.* **35**:144 [Jan.] 1931) on the heat coagulation of egg albumin. According to their experiments, the coagulation of egg albumin by heat may be reversed by the proper use of this compound. From these experiments, Bancroft argues that since rhodanate reverses protein coagulation and since, according to his results, it is effective in such states as anesthesia, narcotic addiction and certain forms of insanity, these conditions must be due to a coagulation of nervous tissue colloids and the efficacy of this drug as a therapeutic agent due to its power of reversing this coagulation. Since your correspondents cast serious doubts on the therapeutic claims made for this hypothesis, there remains to be critically examined the question of whether sodium thiocyanate actually does reverse protein coagulation. In order to do this most effectively, we must go back to the original experiments with egg albumin.

As starting material for their work on coagulation, Bancroft and Rutzler made use of egg albumin prepared by diluting fresh egg white with distilled water and filtering off the precipitate of so-called globulin. As a final, incontrovertible, proof that sodium rhodanate reverses the heat coagulation of this sample of egg albumin, Bancroft cites an experiment on the precipitin reactions of the unheated and reversed materials which indicates that the two are identical. Concerning the nature of his antigens in these experiments, Bancroft writes: "Although the whole white of an egg was used in this work, there can be no question about whether the globulin was responsible for the precipitation or not. The simple answer to that is that there was no globulin present." Even if it is admitted that this material is free from globulin, which, in the

light of recent developments in protein chemistry, is highly questionable, it consists, as demonstrated by many workers and more recently by Hektoen and Cole (Hektoen, Ludvig, and Cole, A. G.: The Proteins of Egg White, *J. Infect. Dis.* **42**:1 [Jan.] 1928) of at least three proteins; viz., ovalbumin, conalbumin and ovomucoid. Of these proteins, the ovomucoid is antigenic and is not coagulated by heat. Aside from the fact that no attempts were made to check the completeness of the coagulation process employed, Bancroft thus overlooked completely the fact that his experimental material contained a protein which is not only antigenic but which undergoes no demonstrable change when heated. In view of the foregoing, the logical interpretation of the precipitin reactions obtained is that they were due, at least in part, to the ovomucoid present. And if it is admitted that this criticism of Bancroft's experimental work is justified, the conclusion follows that he has failed to prove that sodium thiocyanate is capable of reversing the heat coagulation of egg albumin. As further evidence of this failure, the following paragraph from the paper by Bancroft and Rutzler may be quoted: "Since native egg white sols that do not contain too large an amount of the disperse phase stay in suspension at the isoelectric point, the claim is made that to prove the identity of the repeptized protein with the native material, it too should not precipitate when brought slowly to the isoelectric point. Quite obviously the native albumin, which stays up at the isoelectric point, is the abnormal case; whereas the repeptized material which comes down at the isoelectric point acts as it should." It is really too bad that the native egg white doesn't know how to behave properly but the fact still remains that the "reversed" material admittedly differs in at least its physical properties from the original egg white and is, therefore, according to all the principles of protein chemistry, probably different.

There thus seems to be no experimental basis whatever for Bancroft's assertion that sodium thiocyanate is capable of reversing the heat coagulation of proteins. Furthermore, this removes the foundations from beneath his hypothesis that drug addiction, anesthesia and various forms of insanity are due to coagulation of nervous colloids and that sodium thiocyanate, by reversing this coagulation, acts as an effective therapeutic agent in these conditions. In view of these facts, it is not surprising that your correspondents were forced to question the therapeutic claims made for this substance.

ARTHUR G. COLE, PH.D., Chicago.
Assistant Professor of Physiological Chemistry,
University of Illinois College of Medicine.

TOXIC HEPATITIS DUE TO CINCHOPHEN

To the Editor:—When one sees five cases of toxic hepatitis due to cinchophen in eight days, and notes the number of medical articles on the subject appearing in the literature, the suggestion is definite that the condition is on the increase, that more care should be taken in prescribing any of the many products in which cinchophen occurs and that some legislative regulation on the sale of them should be enacted.

After the stopping of the drug, it seems generally held that recovery is best accomplished by intravenous dextrose and subcutaneous insulin. In four previous cases so treated, it was noted that none of the patients tolerated intravenous dextrose injections without severe reactions of prostration, two of these cases terminating fatally. It is rather difficult to understand the rationale of this therapy in which one gives dextrose and then oxidizes it, excepting for its sustaining effect. In the last five cases treated and because the pathologic picture resembles that of acute yellow atrophy, this combination was not employed and a liver therapy used instead. All five patients recovered. These cases tolerate liver feedings, the use of the so-called extract, and the intravenous form nicely. The only extra therapy employed was an occasional dose of magnesium sulphate on an empty stomach in the morning, rest in bed, and simple dieting.

I do not deprecate the use of dextrose and insulin, but from good results accomplished in my cases suggest that liver therapy is a worthy addition, and even a substitution. There is no doubt that the symptoms of headache, gastro-intestinal disturbances, jaundice and the prostration were more benefited most distinctly by the liver therapy, regarding which maximum doses are required.

ANTHONY BASSLER, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CULTURE OF TUBERCLE BACILLI

To the Editor:—I should like information on the following:

Löwenstein, E.: Die Methodik der Reinkultur von Tuberkelbazillen aus dem Blute, Deutsche med. Wchnschr. **56**: 1010 (June 13) 1930.

Urbanek, Joseph: Die Beudeutung der Tuberkulose für die entzündlichen Erkrankungen des Uveal Tractus, supp. to *Ztschr. f. Augenh.*, number 12.

I have a letter in which a diagnosis of tuberculosis was made from a blood culture in which in three weeks acid-fast granules were found which were diagnosed as tuberculous granules. Please give me available information as to the work done on this and its reliability.

B. W. RHAMY, M.D., Fort Wayne, Ind.

ANSWER.—In 1930 and 1931, Loewenstein and his collaborators wrote a number of articles on bacteremia and the cultivation of tubercle bacilli from the blood by a new method devised by Loewenstein, the essential features of the method being that the citrated blood (10 cc.) is hemolyzed by means of 10 cc. of 5 per cent acetic acid and the hemoglobin free (based on the conception that hemoglobin inhibits the growth of tubercle bacilli) residue is planted on an asparagin (based on the conception that peptone inhibits growth while asparagin is favorable to it)-salt mixture-egg and potato flour medium.

They claim a rapid isolation of tubercle bacilli from the blood by this method when other methods, including the guinea-pig, fail. They state that their cultures in many instances differ somewhat from the classic tubercle bacilli. In 1930 Loewenstein and Russeff (*Wien. klin. Wchnsch.* **43**:294 [March 6] 1930) reported three positive blood tests for tubercle bacilli out of eighty cases from Urbaneks eye clinic. Kren and Loewenstein (*Klin. Wchnschr.* **10**:974 [May 23] 1931) report positive results in thirty-one of forty-two cases of tuberculids and thirty-eight of fifty-one of all types of skin tuberculosis. Wessely and Loewenstein (*Beitr. z. Klin. d. Tuberk.* **76**:647, 1931) report 55 per cent positive cultures from forty-seven patients with laryngeal tuberculosis, while Reitter and Loewenstein (*München. med. Wchnschr.* **78**:472 [March 20] 1931) report cultures of tubercle bacilli from the blood in twenty-two of twenty-seven cases of acute polyarthritis. Observers from other communities have not been able to verify the observations with Loewenstein's method. Pollak (*Med. Klin.* **27**:1146 [July 31] 1931) could not verify the high incidence of bacillemia, while Jontofsohn (*Ztschr. f. Tuberk.* **61**:35, 1931) obtained only three positive results from forty-one severe cases of pulmonary tuberculosis and nine cases of surgical tuberculosis. Unverricht and Dosquet (*Ztschr. f. Tuberk.* **63**:338, 1932) obtained only one positive result among ninety-one severe cases of pulmonary tuberculosis, and Ockonomopoulo, Papanikolaou and Joannides (*Ztsch. f. Tuberk.* **63**:340, 1932) obtained no positive cultures from eighteen cases of severe, progressive pulmonary tuberculosis.

The Loewenstein method was submitted to analysis by some American workers, who find that the acetic acid as used in this method is destructive to small numbers of tubercle bacilli but does not efficiently destroy saprophytic acid fast bacilli and that the Loewenstein medium, though efficient, is unnecessarily cumbersome in constituents and mode of preparation. An examination of the blood from 120 far advanced cases of tuberculosis by four different culture methods (including the Loewenstein method) as well as guinea-pig inoculation did not reveal the presence of tubercle bacilli in the blood, and, while the other methods of isolation were able to recover tubercle bacilli from

the blood of infected animals, Loewenstein's method frequently failed unless they were there in large numbers.

Loewenstein does not contend that the finding of acid fast granules is sufficient to make a diagnosis of tuberculosis. Acid fast granules (Spengler's fragments) or Much's granules in themselves found in tissues or pus are of no diagnostic value in tuberculosis.

Since such granules may be found in the absence of tuberculosis and in normal tissues, it is generally undisputed now that their presence is of no significance. It is also well to remember that the typical morphology of the tubercle bacillus is essential to making a diagnosis of tuberculosis in regions where other acid fast bacilli do not come into consideration; but these must not be forgotten in the exceptional case and in sites such as the genito-urinary region and the ears, where the acid fast saprophytes can thrive. In smear they cannot be differentiated, but an appropriate culture method or the guinea-pig will differentiate the saprophyte from the pathogen.

MEDICOLEGAL SIGNIFICANCE OF SKIN CHANGES OF CHILD IN WATER

To the Editor:—How long will the body of a full term baby remain in running water, possibly at a temperature of from 60 to 70 F., before the skin will slip or remove easily?

W. W. DIAMOND, M.D., Jackson, Miss.

ANSWER.—There does not seem to be any specific information about the question asked, but a statement of some assistance is the following, from Ralph W. Webster's "Legal Medicine and Toxicology" (Philadelphia, W. B. Saunders Company, 1930, p. 102): "It is almost impossible to state exactly the duration of submersion of a body. Whatever opinion one decides to offer must depend upon the alterations in the body from maceration and putrefaction. . . . These changes . . . are open to wide variation, depending upon such factors as season and climate, and the consequent temperature of the water; depth of submersion; character of the water; motion of the water, and state of general health of the body at the time of submersion. Hence . . . answers . . . should be very guarded, consideration being taken of the fact that the signs of putrefaction in water appear, in general, only about half as fast as in air."

In order to answer the question as accurately as possible, the following experiment was performed. A full term fetus weighing 2,835 Gm. (6¼ pounds) and measuring 50 cm. in length died as the result of a prolapse of the cord. Within one hour after the child's death it was delivered and immediately submerged in running water at a constant temperature of 70 F. Observations were first made every twelve hours. Until forty-eight hours, no changes were observed in the skin. At the end of this time, however, superficial desquamation began to occur. At the end of fifty-two hours the skin from the body folds could be peeled off, but with difficulty. During the following twelve hours the skin became looser and water collected in the subcutaneous tissue. At the end of sixty-four hours the skin of the torso and the extremities could be peeled off, but still with some effort. During the next eight hours the body floated to the surface of the water. At the end of seventy-two hours there was generalized maceration of the skin and marked infiltration of the subcutaneous tissue with water. The experiment had to be terminated at this time because of the disagreeable penetrating odor of decaying tissue that permeated the room.

CASTS OF UTERINE MUCOSA

To the Editor:—What is the probable cause and probable significance of casts of the uterine mucosa? What of repeated casts? What would constitute efficient treatment? The patient has a retroverted uterus with elongated cervix and seemingly a larger uterus than is common to a nonparous woman.

G. E. DUTTER, M.D., Kane, Pa.

ANSWER.—Expulsion of casts of the uterine cavity during menstruation is uncommon. In most instances the passage of these casts is accompanied by severe and cramplike pains, and this condition is known as membranous dysmenorrhea. Whether or not pain is present when the mucous membrane is passed, menstruation is otherwise regular and normal in most cases. Until the studies of Hitschmann and Adler, it was commonly held that the expulsion of casts was the result of an inflammatory process. However, this belief was invalidated by the knowledge given us by these two investigators of the histologic changes that occur in the endometrium during the menstrual cycle. It is now known that, in the premenstrual period, two distinct layers may be detected in the endometrium. The superficial or compact layer contains a large amount of stroma and few glands, whereas the deep or spongy layer has an abundance of glands and much less stroma than the superficial layer. The stroma cells in the compact layer are frequently so much hypertophied that they resemble decidual cells. Normally, during menstruation, pieces of the superficial layer of endometrium are separated and expelled with the bleeding that takes place. Hitschmann and Adler believe that the separation and expulsion of a uterine cast represent an exaggerated form of the normal process, so that there is a complete separation of the superficial from the compact layer in one piece. These authors maintain that the responsible factor for this gross separation is unusually strong contractions of the uterus, which in turn are due to an obstruction of the cervical canal by a clot of blood. However, this theory is most likely erroneous because dilation of the cervix does not usually relieve patients with membranous dysmenorrhea. Ehrenfest believes that in some cases the septums between the glands of the spongy layer may be almost entirely destroyed. The causes of the destruction may be interstitial hemorrhage and excessive compression from the retention of secretions in the glands. If the destruction of the interglandular septums leads to rupture of blood vessels, a submucous hematoma may form and produce detachment of the mucosa.

It is important to differentiate a uterine cast from an early abortion, and usually a histologic study is necessary for this. Even then it is sometimes difficult to make the distinction if chorionic villi are absent, because in many cases the stroma cells closely resemble decidual cells. Vaginal membranes are easy to rule out by microscopic examination, and in nearly all these cases there is a history of irritant douches or local treatment by a physician.

The treatment is usually unsatisfactory, but occasionally there are spontaneous remissions. In former years, local treatment by the intra-uterine application of destructive drugs such as iodine and phenol was used, but without success. Even dilation and curettement have no beneficial effect; but this is to be expected, judging from the knowledge of the histologic changes in the endometrium. General supportive treatment, including sufficient rest, tonics, exercise and care of the bowels, may help. If pain is present, sedatives are, of course, to be administered. The expulsion of casts per se has no special significance and as far as is known does not lead to any serious consequences.

BESREDKA'S SOLUTION IN INFECTIONS OF ANTRUM

To the Editor:—What is Besredka's solution? What are the indications for its use, and what is its value? Would it be safe to use, or of any value, as an irrigating solution for an infected antrum before a radical operation or after a radical operation when the infection does not clear up? When antrums still continue to drain a small amount continuously, a year after a double radical operation, would any solution other than the usual cleansing solutions assist in clearing them up? All possible ways of building up resistance are being followed. Please omit name and address.

M.D., Texas.

ANSWER.—Besredka's solution is a form of vaccine or bacterial antigen prepared according to a certain fashion. Besredka of the Pasteur Institute on the basis of experiments has added some new ideas on the prophylaxis and treatment of certain bacterial infections. In the case of certain organisms, such as the staphylococcus, treatment by means of vaccines prepared in the ordinary fashion are frequently disappointing. Besredka claims that when certain organisms are grown in broth or broth serum mediums and the organisms are filtered off, there are at least two substances left in the filtrate: a toxic and thermolabile substance which he calls virus, and a thermostable substance which he calls antivirus. When the filtrate is heated, the virus is destroyed and the solution containing antivirus may be used locally and intradermally to establish immunity. The commonest form of local use is by way of wet dressings. For infections due to the staphylococcus or other organisms in which experiments have definitely indicated that antivirus is produced, Besredka's method may be valuable in producing a local as well as general immunity to the offending bacteria. One might have to go to considerable pains to prove this in any individual case, as it would be difficult to demonstrate in a mixed infection which one of the types of bacteria is the cause of the illness. There would then remain the problem of preparing the antivirus. There would be no harm in trying empirically either before or after operation a good commercial preparation of bacterial antigen containing both staphylococcus and streptococcus antivirus prepared after the method of Besredka.

A small amount of drainage from antrums that have been operated on by radical methods is no sign that these antrums are badly diseased, and the presence of such small amounts of secretion should not be responsible for the error of overtreating such sinuses. The patient must be told that he has a disability

of minor importance and that he is not to place too great stress on the presence of a slight amount of discharge. Increasing strengths of alcohol up to 50 per cent added to the usual saline irrigating fluid are sometimes valuable in cases such as this.

SALT SUBSTITUTES IN THE DIET

To the Editor:—I want to ask several questions in regard to dietary table salt. Several substitutes are on the market and, no doubt, are valuable in helping the patient to maintain his appetite without breaking the diet of salt restriction. But the advantage of replacing the chlorine ion by an organic acid radical and retaining the sodium ion, as in sodium malate, is not at all an established fact. Keith and Whelan have advocated the use of calcium chloride, ammonium chloride and ammonium nitrate in the treatment of various forms of edema. It would seem that the chlorine ion has no influence on the retention of fluid and that the sodium retention is at least partially the cause of edema. Rowntree made a statement to this effect in the discussion of one of Keith's papers. The mutual antagonism of calcium and potassium to sodium ions is well known, as well as the diuretic action of various potassium salts. Theoretically, potassium chloride would be a good substitute for table salt in various forms of edema, and by replacing the sodium ion might have some therapeutic action. It is less salty in taste than sodium chloride, and somewhat bitter, but when taken with food makes it more palatable than without salt. I have used it in this manner in a case of edema of cardiac origin with very good results, the edema disappearing faster than with novasurol or theophylline diuretics, and the patient's appetite is maintained. Sollmann states that the administration of from 5 to 10 Gm. of potassium chloride produces no symptoms but that potassium poisoning is possible in chronic nephritis. Are there any contraindications to the use of potassium chloride as a salt substitute? Has any one advocated its use in this manner? Are there other advantages in the use of sodium malate?

L. K. ZIMMER, M.D., Lawrence, Kan.

ANSWER.—There is no doubt that certain patients find it a hardship to be on a low salt diet. Nevertheless, it is an extremely important procedure in dietetic therapy in some cases. Since the work of L. F. Meyer and Bloom in 1909, there have been many experiments confirming their original results and assumption that sodium salts may cause retention of fluid within the body. On the other hand, numerous experiments show that potassium, calcium and ammonium salts have a dehydrating or opposite effect. Calcium chloride and ammonium chloride have been given in large doses both to normal individuals and to patients, without toxic effects, although it must be remembered that the dose should be carefully considered in a case of renal disease with nitrogen retention and a tendency to acidosis. Potassium salts have been known to be toxic, but considerable amounts have been given both to normal individuals and to patients with edema in the last few years, and no actual toxic results have been reported. Therefore, the use of small amounts of potassium chloride, ammonium chloride and calcium chloride as substitutes for sodium chloride in the diet is preferable to a sodium organic compound, such as sodium malate.

EFFECTS OF CORROSIVE MERCURIC CHLORIDE ("BICHLORIDE") DOUCHES

To the Editor:—I have at present under treatment and observation a girl, aged 19, who has been married since November, 1931. At the time of her marriage she began using a certain proprietary tablet, composed largely of bichloride of mercury, as a douche. She used two tablets usually in the solution and occasionally resorted to the douche several times daily. The patient was seen by a physician, who told her that she was absorbing mercury compounds and that the cervix was burned. She came under by observation recently and I find that the anterior lip of the cervix is apparently hypertrophied and is the seat of a scar. The entire os appears swollen and is extremely friable when touched with forceps. This patient is five months pregnant and is apparently doing well. I am in doubt as to the proper procedure in this case at present. Should the cervix be treated medically and, if so, with what particular preparation or should it be cauterized? Please omit name.

M.D., Missouri.

ANSWER.—The habitual use of corrosive mercuric chloride ("bichloride") douches is harmful because of the local irritation produced. Corrosive mercuric chloride tablets are occasionally placed in the vagina for the purpose of preventing conception. This is a dangerous practice and sometimes results in death. The fatal termination in such cases is usually due to local corrosive action; the amount of mercury compounds absorbed is probably rather small. Similarly, the effect of corrosive mercuric chloride douches on the patient has probably been chiefly local.

Avoidance of more corrosive mercuric chloride douches and maintenance of cleanliness are the essentials in the treatment. Soothing vaginal suppositories may be used. Of these, two may be mentioned: (1) a suppository containing hydrastis, 0.3 Gm. (5 grains); sodium bicarbonate, 0.65 Gm. (10 grains); cacao butter, q. s.; (2) suppositories containing trinitrophenol as supplied by various drug house. Cauterization at this time would probably be harmful.

TREATMENT OF HIGH BLOOD PRESSURE—HYPERTROPHY OF PROSTATE

To the Editor:—A business man, aged 79, whose heart and blood are otherwise normal, has a blood pressure of 208 systolic and 86 diastolic. He does not respond to the simple treatment I have given him. Does this pressure come from worry? He has had a lot of business worries in the last year. The urine shows a trace of albumin and a few pus cells. The prostate is enlarged and hard, and there is some frequency of urination. He has some pain in the back, which evidently comes from the enlarged prostate. The arteries are hard, with evidence of arteriosclerosis. Would you advise diathermy for the prostate? What would you advise for the blood pressure? Please omit name.

M.D., Iowa.

ANSWER.—There seems to be little indication for any kind of treatment of this patient. A systolic pressure of 208 and diastolic of 86 is unusual because of the low diastolic pressure in the absence of some type of organic heart disease, as for example an aortic valvular lesion. Occasionally this may occur in conditions of advanced arteriosclerosis. However, it would not be amiss to take the blood pressure before and after half an hour of rest. A lowering of the systolic blood pressure of 20 or 30 mm. is frequently found after a rest period.

The only suggestion that might be made is that the patient rest for an hour after the noon and evening meals. Of course, it is advisable that undue exertion and mental strain be avoided when possible and that sufficient rest be obtained. There are no indications for medication of any sort.

The relatively few symptoms referable to prostatic enlargement, the apparent absence of indications of residual urine in the bladder, and the mere fact that only a few pus cells and a trace of albumin are found in the urine furnish no indications for treatment at the present time. Diathermy is of value for arthritic and muscular pains, which might be the case here, but certainly is not indicated as a means of treating the prostate.

PROETZ TREATMENT FOR INFECTION OF SINUSES

To the Editor:—Please be good enough to describe the Proetz treatment used in ethmoid and sphenoid infections.

N. I. ARDAN, M.D., Niagara Falls, N. Y.

To the Editor:—In the last issue of THE JOURNAL, mention is made of the Proetz treatment of sinusitis. Will you briefly outline just what this treatment is? Kindly omit name.

M.D., Jersey City.

To the Editor:—What is the Proetz treatment for sinusitis and where may reference be had relative to its use?

W. T. WINTERS, M.D., Chicago.

To the Editor:—Will you kindly explain what the Proetz treatment for sinuses is, and how is it given? Please omit name.

M.D., California.

ANSWER.—The Proetz method both for diagnosis and for treatment is used in certain sinus conditions, especially those involving the ethmoids and the sphenoids. The head is placed in the proper position with the chin pointing upward and then the air in the ethmoid cells and the sphenoid sinus is displaced with some radiopaque oil by means of alternate suction and release, applied to the nose by means of some form of pump. The nozzle of the pump is inserted in one nostril, the opposite one is closed alternately, and at the same time the patient's palate is raised by the production of the sound of the letter K. Examination of the roentgenograms taken directly afterward may show filling defects. The length of time required for drainage of the iodized oil from the sinuses before they are entirely emptied serves as a diagnostic and prognostic measure. Dr. Proetz also uses for treatment a dilute solution of epinephrine or ephedrine introduced into the sinuses involved, in the same manner. The fluid remains in the cells a considerable length of time, thus giving a rather lasting astringent effect. This method of Dr. Proetz is most easily applicable to the sphenoids and ethmoids, and often affords much relief. It is difficult to get radiopaque fluid into the frontal sinus, but it may be introduced into the antrum by way of the inferior or the middle meatus.

HYPODERMIC MEDICATION FOR LAXATIVE EFFECT

To the Editor:—Within a relatively short time I have had two patients acutely troubled with constipation whose medical condition was such that medication neither by mouth nor by rectum was practicable. I am aware that laxatives (cascara sagrada and phenolphthalein) may be given by hypodermic injection, yet I have not been able to lay my hands on a reference which treats of the dosage and possible ill effects. Will you kindly advise me through Queries and Minor Notes. Please omit name.

M.D., Pennsylvania.

ANSWER.—Experiments on hypodermic and intravenous injection of cathartics have not as yet yielded practical results. It is true that the phenolphthaleins, the anthracene purgatives such

as aloin, and the resinous cathartics such as podophyllin and colocynthin produce increased peristalsis on subcutaneous or intravenous administration, the effect being due to excretion of the active principles into the intestine by the bile. Subcutaneous injection is, however, too irritating and painful, and intravenous injection too prone to cause undesirable side-effects; nor is the degree of action sufficiently controllable when such bodies are injected. The most practical agent to increase intestinal peristalsis by subcutaneous injection, most especially in such conditions as postoperative paralytic ileus, is physostigmine salicylate, which may be injected in doses of 2 mg. (one-thirtieth grain) hypodermically. Larger dosage is not advisable.

SENSITIZATION TO THYROID

To the Editor:—I have a patient, aged 28, single, who about one year ago had her thyroid removed. Her basal metabolic rate prior to operation had been plus 21. Now she is apparently in excellent health but is beginning to show symptoms of hypothyroidism. She has gained about 35 pounds (16 Kg.) since the operation and is continuing to gain. One week ago I did a basal metabolism determination and found her to have minus 25, which corroborates my diagnosis of hypothyroidism, which in all probability is due to a too radical removal of the thyroid gland. I have put her on thyroid, one-half grain (0.03 Gm.) three times a day, and after several days she developed a reaction in the form of an eruption, and I had to stop the thyroid. All her life she has had an idiosyncrasy toward certain drugs, such as quinine, santonin and bromides, and the type of reaction she developed is somewhat similar to arsenical dermatitis and incapacitates her for several weeks. After the rash had disappeared I put her, on a much smaller dose of thyroid (one-tenth grain, or 0.006 Gm., three times a day). Will you kindly advise me as to whether or not to continue the thyroid if the rash persists? She is in dire need of the medication. How can I desensitize her so that she can continue with her medicine? M.D., Kentucky.

ANSWER.—The undesirable effects of iodide therapy, which includes desiccated thyroid, can at times be avoided by the simultaneous administration of small doses of an arsenic preparation, three or more minims of solution of potassium arsenite, daily. In the event that this fails, attempts to desensitize the patient to thyroid should be made by administering minute doses of the medicament daily, 1/1,000 grain to begin with and after a few days very gradually increasing the dose. If this procedure is not practical, the thyroid will have to be given in ordinary doses intermittently.

ESTIMATING BASAL METABOLIC RATE

To the Editor:—Is the following formula, which I culled from THE JOURNAL some years ago, for estimating the basal metabolic rate considered fairly accurate? B. M. R. = 0.683 (pulse rate plus 0.9 pulse pressure) — 71.5. Please omit name. M.D., New Jersey.

ANSWER.—The formula as given is fairly accurate for an approximate determination of the basal metabolic rate under most circumstances. The only variables in the formula are the pulse rate and pulse pressure, and since the thyrotoxic state is usually associated with a tachycardia and increased pulse pressure, the basal metabolic determination would be roughly parallel to the regular accepted method of metabolic rate determinations. This formula would be decidedly inaccurate in certain cardiac and vascular disturbances associated with rapid or slow pulse rates, such as arrhythmias; in hypertension or arteriosclerosis; in aortic regurgitation from various causes, and in hypothyroidism with normal pulse rate and pulse pressure.

Since there are so many reasonably priced and scientific methods of basal metabolic rate determinations which take into account the comparison of the actual oxygen consumption and the accepted normal oxygen consumption, it would be unwise to go into a process of mathematical computation which gives no more accurate information than taking the pulse rate and blood pressure.

JELLYFISH AND STINGING NETTLES

To the Editor:—The otherwise excellent note on jellyfish and stinging nettles in THE JOURNAL, July 16, omits one important bit of information which should be generally disseminated by medical men for the protection of the public. The translucent, threadlike tentacles of the Portuguese man-of-war may reach a length of 30 feet and are commonly from 10 to 20 feet long. They trail out behind the body as it drifts over the surface of the sea and as they are hardly visible in sea water, it is easy for swimmers who approach too closely to inspect the beautifully colored bladder to come in contact with them. I speak from personal experience and I have no desire to approach nearer than 100 feet to another. The tentacles are undoubtedly venomous and far more severe in effect than the stinging shock of the true jellyfish. Cases of local and general reaction severe enough to require several months' hospitalization are on record (at John Sealy Hospital, Galveston, among others).

JOHN G. HANNA, Florida.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The examination will be held in nineteen different cities in the United States and Canada, Oct. 22. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Sept. 21. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at all centers where there are five or more candidates available in a Class A medical school, Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 8-9. Sec., Dr. Charles Duncan, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 13-14. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Sept. 6. Sec., Dr. O. Costa Mandry, Hospital Mimiya, Santurce, San Juan.

WISCONSIN: *Reciprocity.* Milwaukee, Sept. 13. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

Connecticut Homeopathic Report

Dr. Edwin C. M. Hall, secretary, Connecticut Homeopathic Medical Examining Board, reports the meeting held at New Haven, March 8, 1932. One physician was licensed by endorsement. The following college was represented:

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Hahnemann Medical College and Hospital, Chicago		(1913)	Illinois

Oklahoma June Report

Dr. J. M. Byrum, secretary, Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, June 8-9, 1932. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Forty-nine candidates were examined, all of whom passed. Four physicians were licensed by reciprocity with other states and one physician was granted a duplicate license. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
University of Arkansas School of Medicine		(1932)	1
College of Medical Evangelists		(1932)	1
Northwestern University Medical School		(1932)	1
State University of Iowa College of Medicine		(1930)	1
Washington University School of Medicine		(1930)	1
University of Oklahoma School of Medicine		(1932)	43
University of Tennessee College of Medicine		(1931)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1930)	Arkansas
Rush Medical College		(1923)	Illinois
Tulane University of Louisiana School of Medicine		(1928)	Mississippi
University of Minnesota Medical School		(1929)	Minnesota

Porto Rico March Report

Dr. O. Costa Mandry, secretary, Porto Rico Board of Medical Examiners, reports the written and practical examination held at San Juan, March 1, 1932. The examination covered 17 subjects and included 80 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Tulane University of Louisiana School of Medicine		(1930)	75.6
University of Paris Faculty of Medicine		(1921)	76.7

Dr. O. Costa Mandry also reports 2 physicians licensed by endorsement Feb. 24, and April 1, 1932, respectively. The following colleges were represented:

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Syracuse University College of Medicine		(1929)	New York
Jefferson Medical College of Philadelphia		(1927)	U. S. Army

Book Notices

Gynecological Roentgenology: A Roentgen Atlas of the Female Generative Organs with Special Reference to Uterosalpingography and an Outline of Gynecology in Its Relations to Roentgenology with Case Histories and a Chapter on Radium Therapy. By Julius Jarcho, M.D., F.A.C.S., Attending Gynecologist and Obstetrician, Sydenham Hospital, New York. Volume XIII of Annals of Roentgenology: A Series of Monographic Atlases. Edited by James T. Case, M.D., Professor of Roentgenology, Northwestern University Medical College. Cloth. Price, $20. Pp. 571, with 278 illustrations. New York: Paul B. Hoeber, Inc., 1931.

Hoeber's latest addition to the series of roentgenologic atlases edited by Case is an imposing, beautifully prepared and printed volume which serves both as an atlas and as an adequate textbook. There exists considerable skepticism in gynecologic circles as to a wide application of the methods of air or opaque oil injection of the tubes. Jarcho is peculiarly well suited to the task of producing this work because of his well established position as a recognized gynecologist who has called to his aid everything that roentgenology can bring. He has in a satisfactory manner correlated the roentgenologic with the clinical observations and set out in well ordered manner the indications and contraindications for uterography and salpingography, and the considerable help which proper use of the x-rays may bring in gynecologic diagnosis. The author has done his work well, conservatively and helpfully, and the book can be recommended as a safe and sane guide to gynecologic roentgenology. Sections are devoted to anatomic and physiologic considerations; historical review, technic and indications for the use of pneumoperitoneum and opaque oil injections of the tubes and uterine fundus; therapeutic applications of uterosalpingography, and the contraindications and dangers attending the method for both diagnosis and therapy. A short chapter is devoted to vaginography. Sterility, developmental anomalies and uterine displacements are next studied. Final chapters are dedicated to the roentgenologic diagnosis of pelvic tumors, with special methods for the study of pelvic inflammatory conditions; and at the close a fifty-page section on radiation therapy for the gynecologist. Every gynecologist should read this book, no matter how skeptical he may be of opaque oil injections into the tubes. The roentgenologist who is called on to assist in and to do the interpretation must have help of this kind.

Ohrenärztliche Untersuchungen von Schülern der Taubstummenschulen Schwedens, nebst Bemerkungen zur Frage des Unterrichts der Schwerhörigen. Akademische Abhandlung welche mit Genehmigung der weiterfahrenen medizinischen Fakultät in Upsala zur Erlangung der medizinischen Doktorwürde im Hörsaal des Physiologischen Instituts am 19. Mai 1928 vormittags um 10 Uhr öffentlich verteidigt wird. Von Martha P:son Henning, Med. Lic. Paper. Pp. 278, with illustrations. Uppsala: Almqvist & Wiksell, 1928.

This monograph on the subject of otologic examination of pupils in the deaf mute institutes of Sweden served as a doctor's thesis. There is an excellent chapter on the history of deafmutism together with instruction of deaf mutes. The author states that one of the most important problems of deafmutism in our day is to utilize the remnants of hearing if they are of sufficient degree that the individual may be trained by way of his own ears. She calls attention to the fact that in ancient times a deaf mute was neglected or even maltreated, as deafmutism was considered a mental disease. Exceptions to this rule were said to exist in ancient Persia and Egypt, where deaf mutes were considered favorites of the gods and of heaven. Up to the middle ages, no progress was made until Cardanus in 1560 called attention to the important fact that in deafmutism the deafness is primary, and that mutism is not due to any organic defect in the speech mechanism but appears secondary to the deafness. The subject of the frequency of deafmutism and the method of examination of the hearing is then outlined. The author then recites the actual investigation in the various districts of Sweden, the details of which are indicated in twenty-seven tables. The general conclusions are that: 1. In all schools for deaf mutes, systematic and regular examination should be carried out by otolaryngologists, who shall outline the exact treatment to be followed. 2. In districts in which there are no otologists, arrangements should be made so that at least once a year otologists shall visit the schools to conduct the examination and direct the treatment. 3. It is desirable that all deaf mute pupils should have their eyes examined carefully at least once a year. The latter examination is necessary because in most of these individuals it is necessary that lip reading be instituted, and therefore good eyesight is essential. There is a complete bibliography at the end of the monograph. Altogether this is an interesting and valuable study in deafmutism from a practical standpoint and should prove of value especially to those who are engaged in teaching the deafened and hard of hearing.

The Carnegie Foundation for the Advancement of Teaching, Twenty-Sixth Annual Report of the President and of the Treasurer. Paper. Pp. 129. New York: Carnegie Foundation for the Advancement of Teaching, 1931.

In the chapter entitled "Past and Future" the author says: "Our schools are responsive to popular aspiration and consequently to public opinion as is no other national system of education. Schoolmasters determine the purposes and the policies of education, as distinguished from its procedures, far less than do the clients who organize, support, and control the schools through private or public agencies. . . . The wide range of school performances which we observe in the United States is not the result of a confused professional mind, as some critics superficially assume; it is a clear indication that America is a huge social laboratory in which thousands of sincere, if not always well advised and well controlled, experiments are being conducted. Here social aspiration and criticism, both intuitive and scientific, are at work. . . . The way out of a confusion which has its source in sincere, widespread experimentation is not to have none of it or less of it, as some persons might seem to suggest. The way out is to be found in thoughtful comparison, in appraisal of our richly diverse educational practice, and in selection and diffusion of the best accomplishments." It may be so.

Die Blutkörperchensenkung: Erfahrungen und Bericht über die Literatur der letzten drei Jahre. Von Dr. Max Leffkowitz, Oberarzt der II. Inneren Abteilung des städtischen Krankenhauses Moabit in Berlin. Paper. Price, 2.50 marks. Pp. 39, with 3 illustrations. Berlin: Urban & Schwarzenberg, 1932.

This booklet is a digest of the subject of the suspension stability of blood, based on about 670 articles, which appeared in the medical journals from 1927 to 1931. The nature of the material precludes the possibility of giving a summary of the conclusions, but the extent of the treatment of the subject matter may be seen from the chapter titles. A comprehensive review of the articles is grouped under the headings of fundamentals and theory of the sedimentation reaction, technic and errors, normals, effect of external forces, the condition found when tumors are present, echinococcus infestation, diseases of the circulatory system, blood diseases, infections, tuberculosis, diseases of the gastro-intestinal tract, liver and gallbladder, miscellaneous diseases, and neurologic, psychiatric, obstetric, gynecologic, surgical, urologic, neuromuscular, ophthalmologic, laryngologic, rhinologic, otologic and dermatologic cases. There is a section on the relationship of the sedimentation reaction to other blood reactions, and reviews of articles on animal experiments and observations in veterinary medicine. The whole treatment of the subject is probably one of the best digests covering this specific group of articles that has yet appeared.

Modern General Anesthesia: A Practical Handbook. By James G. Poe, M.D., Lecturer on General Anesthesia in the Medical and Dental Departments of Baylor University, Dallas, Texas. Second edition. Cloth. Price, $2.50. Pp. 231, with 12 illustrations. Philadelphia: F. A. Davis Company, 1932.

The author has set out to write a textbook for students, and he presents the material in a classified and concise form. Theories have been omitted. A large chart is presented which outlines the zones of the third stage of ether or ether sequence anesthesia with signs in each zone. This is followed by a chapter in which various words used in anesthesia are considered. In six chapters the details of the large chart are described in further detail. There are short chapters on anesthesia with ether, nitrous oxide, ethylene-oxygen, chloroform and ethyl chloride, with a short presentation of the advantages and disadvantages, indications and contraindications of each agent, together with instruction in their use. A chapter each is devoted to carbon dioxide, to choice of the anesthetic, and

to the use of general anesthetics in obstetrics. Preanesthetic and postanesthetic care of the patient are dealt with separately, as are the nonvolatile anesthetic agents tribrom-ethanol ("Avertin"), sodium iso-amylethyl barbiturate (sodium amytal), and β-brompropenylisobutyl barbituric acid (pernocton), and local anesthetics. The book is written in a philosophical manner and is brief and convenient.

Ergebnisse der Reiztherapie bei progressiver Paralyse. Herausgegeben von K. Bonhoeffer und P. Jossmann. Sonderausgabe von Heft 65 der „Abhandlungen aus der Neurologie, Psychiatrie, Psychologie und ihren Grenzgebieten." Paper. Price, 14.80 marks. Pp. 154. Berlin: S. Karger, 1932.

This valuable volume contains a series of collected papers by the staff of the Berlin Psychiatric Clinic on various aspects of the treatment of dementia paralytica with malaria. The authors report their observations of more than 2,000 cases treated by the Central Psychiatric Clinic and other clinics of the Berlin municipality in the period 1922-1929. There are in all eleven papers reporting the various aspects of the problem studied. There is an introductory chapter on the general problem of febrile therapy in dementia paralytica by Jossmann. The use of drugs in connection with malaria is discussed by F. Kallmann. The treatment of dementia paralytica with malaria is discussed by E. Heinze, and there is an excellent chapter on the nonspecific protein therapy of malaria by Roggenbau. The new syndrome of the paranoid hallucinatory clinical picture such as one finds after treatment of malaria is discussed by Warstadt. The social aspects of the convalescent patient is discussed by Kathe Misch-Frankl and Möllenhoff. With 23 per cent of recoveries and 40 per cent of improvements, the malarial treatment certainly presents a remarkable advance in treatment. This is the largest series reported thus far in a scientific, systematic way. It is to be regretted that correlative studies such as these have not been made in America.

Modern Treatment Anæsthesia. By W. Stanley Sykes, M.A., M.B., D.P.H., Anæsthetist to the General Infirmary at Leeds. With a Section on Local Anæsthesia. By P. J. Moir, M.C., M.B., F.R.C.S., Hon. Assistant Surgeon, General Infirmary at Leeds. Cloth. Price, $2. Pp. 128, with illustrations. New York: W. W. Norton & Company, Inc., [n. d.].

This book, says the author, was written for the occasional anesthetist, and it will well serve its purpose. Parts of the volume are written with headings and subheadings; and the frequent use of short, imperative expressions makes the information readily accessible. In reading this book one gets, in a general way, a picture of the methods of anesthetization used at Leeds. These methods, and the apparatus employed, are somewhat different from those used in this country. For this reason the book would be more useful to anesthetists in England than to anesthetists in America. The reader must be impressed with the extensive experience of the author, who also has a happy way of expressing himself. This felicity is particularly evident in the chapter on endotracheal methods, in which he writes: "Some practice is required to introduce the tube quickly and correctly without removing pharyngeal divots." Local and regional anesthesia are barely referred to. The author stresses the use of his device, the safety open ether inhaler, which prevents ether from being spilled on the face.

Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Das röntgenographische Bewegungsbild und seine Anwendung (Flächenkymographie und Kymoskopie). Von Dr. Pleikart Stumpf, Röntgenfacharzt in München. Mit einem Geleitwort von Dr. Gottfried Boehm, a. o. Professor der Universität München. Fortschritte auf dem Gebiete der Röntgenstrahlen, Ergänzungsband XLI. Herausgegeben von Prof. Dr. Grashey. Paper. Price, 15 marks. Pp. 78, with 117 illustrations. Leipzig: Georg Thieme, 1931.

Previous work of the author is amplified in this monograph, which describes a new, accurate and economical method of recording the movement of internal organs on one film. This is made possible by an adaptation of the kymograph, permitting timed exposures at successive levels and at regularly spaced intervals, with exposed portions being separated by an unexposed strip of the film. By this means, contour curves of maximal and minimal movements, particularly of the heart and the aorta, can be accurately measured. The technic is fully described. A section is devoted to diagnostic application. Results are described in studies of the heart, aorta, pericardium, diaphragm, esophagus and stomach.

Psyllium Seed: The Latest Laxative. A Scientific Treatise. By Dr. J. F. Montague, Medical Director, Montague Hospital for Intestinal Ailments. Cloth. Price, $2. Pp. 170, with 20 illustrations. New York: Montague Hospital for Intestinal Ailments, 1932.

This seed, because of its resemblance to fleas, has been called flea-seed and was employed by the ancient Egyptians in the form of an infusion for the same purpose for which it is used today. Since the introduction of psyllium into this country, the market for the seeds, for which the French have coined the more pleasing term of "grains de longue vie," or "long life seeds," has increased to such an extent that large areas, most especially in Provence, are now wholly dedicated to its cultivation. The author is convinced that psyllium has advantages over liquid petrolatum in that there can be no leakage, and over bran in that it does not produce undesirable irritation on the intestinal mucosa. The mucilage is partly digestible, but there is still enough left to be distinctly recognizable in the stools. The main contraindication for psyllium seed is ulcer or any other break in the normal surface of the alimentary tract.

Les affections de l'oreille chez l'enfant. Par le Dr. Max Meyer, professeur à l'Université de Wurtzbourg. Traduit de l'allemand par le Docteur P. Gauthier-Villars. Paper. Price, 40 francs. Pp. 201, with 31 illustrations. Paris: Gauthier-Villars & Cie, 1932.

This is, as the title indicates, a French translation of the excellent monograph published by Dr. Max Meyer of the University of Würzburg in 1930. This work was originally intended for practitioners in pediatrics. Beginning with a description of the method of using instruments in the examination of the ear, a discussion of its physiology follows. Diseases of the external ear are discussed and followed by acute otitis media, chronic otitis media together with tuberculosis and syphilis of the ear as well as labyrinthitis. The last chapters are devoted to traumatic conditions of the ear in the deaf mute child.

As indicated in the preface of the book, the subjects are taken up in a brief manner and from a practical point of view and should prove of great value to the pediatrician, particularly permitting him to diagnose many conditions before more serious complications ensue, thus giving him full opportunity to have the patient, if necessary, receive the benefit of the cooperation of the otologist. The translation itself seems to be a good one and the little volume will prove of considerable interest to its new circle of readers.

Handbook of Physical Therapy. This Volume Contains Articles by Various Authors That Have Been Adopted and Authorized for Publication by the Council on Physical Therapy of the American Medical Association. Cloth. Price, $2.50. Pp. 526, with illustrations. Chicago: American Medical Association, [n. d.]

In the introduction of this volume Dr. Harry E. Mock, chairman of the Council on Physical Therapy, calls attention to the fact that at the close of the reconstruction period after the war the situation in physical therapy rivaled that of the palmy days of "patent medicines" when both the medical profession and the public were flooded with often unwarranted and too many therapeutic claims for physical therapy methods and apparatus. A definite authority was needed to bring about order in the existing chaos, at least so far as organized medicine was concerned, and the Council on Physical Therapy set about with the means and men at its disposal to do this work. The present volume represents a large part of the efforts of the Council to place the use of physical measures on a sound and scientific basis, to separate propaganda from real facts, as far as the use of apparatus is concerned. It is a collection of the series of articles written by members of the Council or special consultants and published in THE JOURNAL. Advice based on authoritative investigation is offered on most phases of physical medicine. Special emphasis is laid on the simpler methods of applying heat, massage and exercise in many of the medical and surgical conditions in which physical measures are indicated. The volume should serve as a ready authority for consultation by every practitioner of medicine, who inevitably must need the use of physical measures in one phase or another of his daily work. Those specializing in physical therapy or in any other department of medicine will find these articles indispensable for guidance and for reference. In the present times of stress, the necessity of the physician to do things himself without the aid of assistants is especiall/

evident. No doubt, in the series of articles to follow, further advice based on matured clinical experience will be offered to physicians as to what they can accomplish in the various pathologic and functional conditions, with the basic physical measures available.

Diagnostik und Therapie der Kinderkrankheiten mit speziellen Arzneiverordnungen für das Kindesalter. Ein Wegweiser für den praktischen Arzt. Von Prof. Dr. F. Lust, Director des Kinderkrankenhauses (Bad. Landesanstalt für Säuglings- und Kleinkinderfürsorge) in Karlsruhe. Seventh edition. Paper. Price, 10 marks. Pp. 543. Berlin: Urban & Schwarzenberg, 1932.

There are relatively few books appearing on pediatric treatment. The emphasis in this book is almost entirely on treatment. Only reliable methods of therapy are described and only those methods included with which the author has had experience. A short concise diagnostic summary of each disease precedes the outline of the treatment. The diseases peculiar to childhood are given more space than those common to internal medicine. The changes in this edition express Professor Lust's latest views on subjects in which opinions have changed in the past few years, such as treatment of rickets, scarlet fever, congenital syphilis, asthma and infant feeding. The second part of the book lists drugs commonly used in pediatrics. They are arranged alphabetically and include uses and doses at different ages. Foods used for infants and children and their preparation also are listed. A few pages are devoted to toxicology. A third section is devoted to listing various resorts and climates beneficial for various pediatric pathologic conditions. It is essentially a concise practical book on diagnosis and treatment for the busy general practitioner or medical student rather than for the pediatrician. It has recently been translated into English by Dr. S. A. Levinsohn.

Medical Reporting in Pitman's Shorthand, Isaac Pitman, With an Introduction and Lists of Phraseograms, Outlines and Abbreviations. By Henry Dickinson, Official Shorthand-Writer to the Royal Society of Medicine. New era edition. Cloth. Price, 3/6. Pp. 88. London and New York: Sir Isaac Pitman & Sons, Ltd., [n. d.].

The author of this volume has been for many years a reporter of scientific medical meetings in England. He has found it necessary to develop a great number of signs for medical words and phrases in order to gain speed. His book on the subject is largely a list of such signs, and a number of exercises to be practiced by the shorthand writer who wants to acquire speed in the medical field. In a brief introduction to his book, Mr. Dickinson explains some of the difficulties liable to be encountered. The volume will be exceedingly useful to any medical shorthand writer.

The Value of Tuberculin Tests in Man with Special Reference to the Intracutaneous Test. By P. D'Arcy Hart. Medical Research Council, Special Report Series, No. 164. Paper. Price, 2s. Pp. 136. London: His Majesty's Stationary Office, 1932.

This report on the value of the Mantoux test contains critical summaries of all important previous statistics and adds a large number of cases tested by the author. The sections on diagnostic applications consider the significance of a positive skin reaction, of a negative skin reaction, the sensitiveness of the tests, and the value in diagnosis and prognosis. The sections on epidemiologic applications consider the value of the tests in the contact clinic and the value of the tests in determining the distribution of tuberculous infection in the community. A number of tables and charts embracing various phases of statistical evidence, and a long list of references, are included. The technic of testing is described in detail. The author discusses the need for carrying the Mantoux test into higher concentrations than usual when necessary, and analyzes with great detail the results of surveys made with various methods of testing. The influence of war, urbanization, social status, race and contact on the incidence of tuberculization is considered, and provides interesting reading provocative of speculation. This work is clearly and concisely written. It presents the best opinion of the present day on the exact status of the Mantoux test and gives the percentage of error as determined in large numbers of patients in various groups. The discussions and conclusions are accurate to a fault. Every worker who does tuberculin testing, and every one who considers tuberculosis statistics, will find a wealth of material in this report.

Alcoholic Fermentation. By Arthur Harden, Ph.D., D.Sc., LL.D. Fourth edition. Cloth. Price, $5.50. Pp. 243, with 10 illustrations. New York: Longmans, Green & Company, 1932.

This excellent treatise has undergone a fourth revision. Since the publication of the third edition a voluminous amount of material on alcoholic fermentation has appeared in the literature. The author has endeavored to include only work of fundamental importance, particularly inclining to the practical aspect rather than the theoretical. A noteworthy chapter presents the involved chemistry of fermentation, in which the function of phosphates plays an illuminating part. Significantly the author points out that the fundamental biologic mode of attack on carbohydrates is that revealed by the study of alcoholic fermentation. The subject still remains one of the most interesting in the whole field of biologic chemistry, the limited degree of insight that has already been gained into the marvelous complexity of the cell lending additional zest to the attempt to penetrate the darkness which shrouds the still hidden mysteries. An extensive bibliography has also been prepared.

Die Schleimhaut des Verdauungskanals im Röntgenbild: Eine normale und pathologische Röntgenanatomie der Innenwand des Verdauungskanals. Von Henri Chaoul und Albert Adam. Mit einem Vorwort von Ferdinand Sauerbruch. Paper. Price, 22.50 marks. Pp. 229, with 219 illustrations. Berlin: Urban & Schwarzenberg, 1931.

Within the recent past, several monographs have been written on the relief pattern of the gastro-intestinal tract in normal and pathologic states. Seemingly these works have arisen as the result of the fundamental studies of Forssell. The monograph of Henri Chaoul and Albert Adam is rich in illustrations and discussion concerning the relief pattern of the mucosa of the gastro-intestinal canal. In addition, the authors have utilized a specially designed compression bulb, which is easily manipulated during the roentgen studies.

Problems in Solutions. By Elizabeth E. Sullivan, R.N., Instructor in Schools of Nursing. Cloth. Price, $1.35. Pp. 100. Boston: M. Barrows & Company, 1932.

Whether it has been a fault in the public school system of America or simply a trait more common to certain minds, the matter of simple proportions is—to the average nurse and oftentimes to physicians as well—most confounding. When the student nurse encounters the elementary arithmetic associated with the making of solutions or the primary problems of chemistry, she is generally, in the language of the street, "up against it." Possibly no one has realized it better than Miss Sullivan, who has had broad teaching experience. How much good such a book will do is problematic. In the first place, one who explains these arithmetical problems should have a reader with patience and a certain amount of intelligence. After this step is successfully passed, Miss Sullivan may get her book across. To one, on the other hand, who has even a fair acquaintance with lower mathematics, the book seems unnecessarily cumbersome and the methods of explanation strongly reminiscent of the third or fourth grade of a progressive school system. If it will keep a nurse who has been told to administer a tablet of one-eighth grain of morphine from giving two tablets of one-fourth grain, it is well worth the effort. To most physicians it is not recommended. For nurses, anything that will help them in laws of proportions and calculations of dosages must be praised. In a few places, however, even Miss Sullivan might be a little more scientific; for instance, the matter of dosage of dextrose is based on a rather unscientific conception.

Un nouveau traitement abortif de l'érysipèle et du streptocoque par les rayons rouges, la chambre rouge et le bandage rouge. Par Dr. Skevos G. Zervos. Paper. Price, 8 francs. Pp. 22. Athènes: The Author, 1932.

This brochure deals uncritically with two cases of erysipelas abortively cured by exposure to rays of sunlight and lamplight filtered through red linen, covering windows, doors and lamps in the sickroom. The clinical data presented are negligible and uncontrolled. No experimental evidence is adduced to prove the author's contention that the streptococci in the erysipelatous area are killed by the specific action of the red rays or that the red chamber, red rays or red bandages will bring about abortive cures of acute exanthematous diseases. This is a cumbrous pamphlet of unscientific reasoning.

Medicolegal

May Hair Turn White as Result of Accident?—The plaintiff's chestnut hair was just beginning to turn gray, but within a day or two after an accident it turned snow white. No medical witnesses were called to express an opinion that the accident was an adequate procuring cause of the change. The jury was instructed that the plaintiff was entitled to be compensated for any changes that had come to her person as a result of the accident. The defendant excepted to so much of the charge as related to the change in the color of the hair. It is a matter of common knowledge or belief, said the Court of Appeals of New York, that hair may grow white in a single night from sudden fears, quoting Byron, in The Prisoner of Chillon. Muller, in "Hair and Its Preservation," says: "Gray hair, so long regarded purely as a sign of approaching or premature age, is simply due to the absence or loss of pigment or the presence of more or less air within the hair, caused either by sickness, worry, shock, severe mental strain long continued, or accidents." Indeed, it is not seriously questioned in this case that gray hair may result from shock. The contention is that a mere sequence of accident and change in color of the hair is an argument of "post hoc, ergo propter hoc"; that some medical man should have been called to say that in his opinion the accident was an adequate producing cause of the gray hair. In many cases jurors might find it difficult, without the aid of medical evidence to connect conditions complained of with an accident, but the results may be of such a character as to enable them to draw their conclusions from their own knowledge or experience. Thus, if a plaintiff testified that after he was struck in the eye he had what is vulgarly known as a black eye, it would be unnecessary to produce an expert witness to say that an extravasation of blood resulting in ecchymosis might follow such a blow. On the other hand, remote and unusual effects of physical injuries, such as cancer or tuberculosis, would call for more than a layman's knowledge of cause and effect. Here we have no difficulty in surmising that if a medical man had been called by the plaintiff and asked on a hypothetical question, including the facts testified to, what caused the change in the color of the hair, he would have said that in his opinion it was due to the accident. The failure to give professional sanction to a result for which no other adequate cause is remotely suggested ought not to cost the plaintiff her judgment, especially as it appears that the jury did not take seriously the pecuniary loss due to the sudden change in the color of hair which was already beginning to turn gray. The judgment in favor of the plaintiff was affirmed.—*Shaw v. Tague (N. Y.), 177 N. E. 417.*

Workmen's Compensation Acts: Bites of Wood Ticks an Accident.—Pierce was exposed to the bites of wood ticks, in Idaho, in the course of his employment, from day to day, after March 25, 1930. He was taken sick, April 3, and died, April 9, of Rocky Mountain spotted fever. The Supreme Court of Idaho held that the tick bite or bites, the injury or injuries, that caused the Rocky Mountain spotted fever that resulted in death was an "accident," since it was, in the ordinary and popular sense of the term, an unlooked-for mishap which was neither expected nor designed. The fact that an accidental injury results in a disease does not alter the nature or the consequential results of such an injury. The deceased, the court held, received a "personal injury" by accident arising out of and in the course of his employment.—*Reinoehl v. Hamacher Pole & Lumber Co. (Idaho), 6 P. (2d), 860.*

Authority of Court to Order Roentgenograms of Plaintiff in Personal Injury Action.—A New Jersey statute authorizes a court before which an action for damages for personal injuries is pending to direct that roentgenograms of the plaintiff be taken by a competent roentgenologist in the presence of a representative of all parties to the action (P. L. 1931, p. 124). The plaintiff contended that this statute is unconstitutional under the Fourteenth Amendment of the Constitution of the United States. A number of decisions in other jurisdictions, said the Supreme Court of New Jersey, have held that in the absence of a statute the court cannot compel the plaintiff undergoing an examination before trial to submit to the taking of roentgenograms. These decisions rested on the lack of confidence on the part of the court in the safety of the process, not on the lack of power of the court to require an examination before trial. The New Jersey legislature, the court assumed, in enacting this statute decided that there was perfect safety and propriety in the taking of roentgenograms. Hence the order of a court made pursuant to the statute is as well within its power as an order directing the plaintiff to submit to a physical examination in the presence of her physician by a competent physician chosen by the defendant. The statute is valid and in the absence of an abuse of discretion an order entered under its authority is valid.—*Golden v. Public Service Coordinated Transport (N. J.), 157 A. 651.*

Alleged Gestation Period of 320 Days.—The plaintiff gave birth to a normal child after an uneventful pregnancy, 320 days after what she testified was her last act of intercourse with the defendant. She denied having had intercourse with any other man. The judgment of the trial court holding that the defendant was the father of the child was reversed by the Supreme Court of Wisconsin and the cause remanded for a new trial. Medical literature, said the Supreme Court, indicates that while such cases of extended pregnancy are not unknown, they are extremely rare. Against these few scattering cases, there is the vast common experience of mankind with respect to the regularity of the course of nature as regards both man and the mammals generally. If there was any evidence of a delayed pregnancy, if there was any evidence that the child exhibited when born signs of a protracted pregnancy or other untoward circumstance, the case might be quite different. It is considered, said the court, that no one can say beyond a reasonable doubt that the defendant was the father of this child. The most that can be said—and to say that taxes one's credulity—is that such a thing was barely possible. The law requires guilt to be established by evidence which convinces the jury beyond a reasonable doubt. The fact that in the course of the history of medical science a few cases have been gathered together which in the main depend for their authenticity on the unsupported statement of the mother, from which it appears that such protracted pregnancies may occur, does not satisfy the rule of law.—*Gillis v. State (Wis.), 238 N. W. 804.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Montreal, Sept. 19-23. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Neb., Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, French Lick, Indiana, Sept. 12-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.

American Congress of Physical Therapy, New York, Sept. 6-10. Dr. F. B. Balmer, 185 North Wabash Avenue, Chicago, Secretary.

American Hospital Association, Detroit, Sept. 12-16. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Physical Therapy Association, Detroit, September 28-30. Dr. C. C. Vinton, 585 West End Avenue, New York, Secretary.

American Roentgen Ray Society, Detroit, September 27-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Colorado State Medical Society, Estes Park, Sept. 8-10. Mr. Harvey T. Sethman, 227 16th Street, Denver, Executive Secretary.

Delaware, Medical Society of, Lewes, September 27-28. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.

Idaho State Medical Association, Pocatello, Sept. 16-17. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Indiana State Medical Association, Michigan City, September 27-29. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Michigan State Medical Society, Kalamazoo, Sept. 13-15. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Oregon State Medical Society, Klamath Falls, Sept. 22-24. Dr. Albert W. Holman, 410 Taylor Street, Portland, Secretary.

Utah State Medical Association, Ogden, Sept. 15-17. Dr. Leland R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.

Washington State Medical Association, Tacoma, Sept. 12-14. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

American Journal of Hygiene, Baltimore

15: 601-840 (May) 1932

Malaria Studies on Firestone Rubber Plantation in Liberia, West Africa. M. A. Barber, J. B. Rice and J. Y. Brown, Monrovia, Liberia, West Africa.—p. 601.
Anopheles Gambiae in Brazil. R. C. Shannon, Bahia, Brazil.—p. 634.
Further Studies on Ancylostoma Braziliense and Etiology of Creeping Eruption. W. E. Dove, Baltimore.—p. 664.
Electrophoresis of Normal and Chemically Treated Strains of Pneumococci. R. L. Thompson, Baltimore.—p. 712.
Studies on an Acquired Resistance of Chickens to the Nematode Ascaridia Lineata (Schneider). G. L. Graham, J. E. Ackert and R. W. Jones.—p. 726.
Budding and Other Variations in Endolimax Nana: Comparison with Councilmania Tenuis Kofoid, 1928. Bess E. Segal, Philadelphia.—p. 741.
Further Infectivity Experiments with Mosquitoes and Bird Malaria. C. G. Huff, Chicago.—p. 751.
Effect of Infra-Red Radiation on Bacterium Lepisepticum Abscesses in Rabbit. Janet H. Clark and Jeannette Chapman, Baltimore.—p. 755.
Chromium Toxicology: Absorption of Chromium by Rat When Milk Containing Chromium Was Fed. Lillian W. Conn, H. L. Webster and A. H. Johnson, Binghamton, N. Y.—p. 760.
Factors Influencing Calcium Concentration in Serum of the New-Born. H. Bakwin and Ruth Morris Bakwin, New York.—p. 766.
Notes on Louisiana Culicoides (Diptera Ceratopogoninae). E. H. Hinman, New Orleans.—p. 773.
Pleural Hairs of American Anopheline Larvae. F. M. Root, Baltimore.—p. 777.
Serologic Relationships of Endamoeba Histolytica. P. E. Menendez, Baltimore.—p. 785.
*Pathologic Studies of Human Amebic Ulcers, Especially Those of Carriers. K. Hiyeda and M. Suzuki, Mukden, China.—p. 809.
Complement Deficient Guinea-Pig: Study of an Inheritable Factor in Immunity. R. R. Hyde, Baltimore.—p. 824.

Human Amebic Ulcers.—Hiyeda and Suzuki describe the pathologic changes in five human cases in which amebic ulcers were found in the large intestine. They give the course of an amebic infection as follows: When the amebas enter the lumen of the large intestine, the intestinal epithelium produces a large amount of mucus, which prevents many of the amebas from entering the tissues. The struggle between the amebas and the mucus may last for from two to eight days; this may be verified experimentally. If the amebas succeed in coming in contact with the epithelium, they give rise to necrosis or necrobiosis of the superficial epithelial layer. They multiply when they come in direct contact with the tissue, even though they are actually in the lumen of the intestine. Toxic substances produced by the amebas lead to the necrosis of the mucous membrane. In this way the roughness of erosion of the superficial mucous membrane occurs. The amebas make their way deeper into the intestinal wall, multiply there, and produce a large area of necrosis; finally, a typical large crater ulcer develops. If the secondary bacterial infection is severe, there will result an abscess. A crater ulcer may also result from the bursting of such an abscess, although this is not usual. The amebas within the tissue of the submucosa make their way mostly longitudinally to the axis of the intestine. This is why the ulcers are wider below the surface and why they build the tunnel-like communications under the intact epithelial covering. If the regenerating activities of the epithelial cells and other intestinal tissues overcome the invading power of the amebas, the reparation of the ulcer occurs, causing a thickening of submucosa. But restitutio ad integrum is never reached as long as the amebas are present. If small ulcers occur with only a few amebas in their vicinity, the balance of amebic vitality and tissue resistance is well kept, and no marked intestinal symptoms may occur. This is the condition of the ameba carrier. Cellular infiltration in amebic ulcers mainly depends on mixed infection of bacterial origin. None of the leukocytes have a special affinity for the amebas or their products. The amebas in equilibrium with the local tissues will remain so for long periods, but if the equilibrium is broken in some way, the amebas may become active again and give rise to an acute exacerbation.

American J. Obstetrics and Gynecology, St. Louis

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Passage of Sperms and Eggs Through the Oviducts of Rabbit and Human Being with a Consideration of Sampson's Theory of Hemorrhagic or Chocolate Cysts. G. H. Parker, Cambridge, Mass.—p. 619.
*Maternal Mortality and the Mercurochrome Technic: Analysis of Deaths Following Fifteen Thousand Six Hundred and Forty-Seven Deliveries at Methodist Episcopal Hospital, Brooklyn, N. Y., Ten Thousand of Which Followed Use of Mercurochrome as a Vaginal Antiseptic. H. W. Mayes, Brooklyn.—p. 627.
*Age Distribution of Fifteen Thousand Three Hundred and Seventy Obstetric Patients and Its Effect on Type of Delivery. C. H. Peckham, Baltimore.—p. 635.
New Analysis of Duration of Pregnancy Data. H. Hotelling and Floy Hotelling, New York.—p. 643.
*Eclampsia Without Convulsions or Coma. W. J. Dieckmann and C. R. Wegner, St. Louis.—p. 657.
Study of Blood and Urinary Amylase in Pregnancy and Its Late Toxemias. A. N. Arneson and K. C. Morrin, St. Louis.—p. 664.
Blood Chemistry Study in Normal Pregnancy and Eclamptogenic Toxemia. S. Kaplan, Chicago.—p. 673.
*Analytic Study of One Thousand Cases of Cesarean Section. M. Courtiss and J. C. V. Fisher, Boston.—p. 679.
*Relation of Amenorrhea Accompanied by Genital Hypoplasia to Follicular Hormone in Urine. R. Kurzrok and Sarah Ratner, New York.—p. 689.
Excretion of Estrin During Pregnancy. Dorothy Edwards, Chicago.—p. 694.
Therapeutic Value of Amniotin in Menopause. S. H. Geist and F. Spielman, New York.—p. 697.
Therapeutic Value of Theelin in Menopause. S. H. Geist and F. Spielman, New York.—p. 701.
Further Study of Anterior Pituitary Sex Hormones. S. D. Soule, St. Louis.—p. 708.
Aschheim-Zondek Reaction in Rabbits. F. J. Schoeneck, Syracuse, N. Y.—p. 712.
Modifications of Hormone Tests for Diagnosis of Pregnancy. R. A. Lifvendahl, Chicago.—p. 721.
*Comparison of Sedimentation and Ruge Virulence Tests in One Hundred and Fifty Gynecologic Cases. W. A. Simunich, Chicago.—p. 724.
*Unreliability of Laboratory Aids in Diagnosis of Gonorrhea in Women. A. Jacoby, New York.—p. 729.
Some Observations Concerning Erythematous Eruptions Simulating Scarlet Fever Developing in Puerperium. P. F. Stookey and Cornelia M. Downs, Kansas City, Mo.—p. 735.
Effect on the New-Born Child of Sodium Iso-Amylethyl Barbiturate (Sodium Amytal) When Used as Obstetric Analgesic and Anesthetic. G. S. Littell, Dallas, Texas.—p. 741.
Bacteriology of the New-Born, with Especial Reference to Hemolytic Streptococci. L. J. Aries, I. Pilot and Myrtle S. Shaffer, Chicago.—p. 745.
Sympus Apus, a Rare Fetal Anomaly: Report of Case. R. A. Reis and J. L. Baer, Chicago.—p. 749.
Preliminary Report on Use of Sodium Amytal and Scopolamine Anesthesia During Labor. H. B. Nelson, Boston.—p. 752.
Value of Kidney Visualization in Pregnancy: Preliminary Report. E. L. Cornell and C. H. Warfield, Chicago.—p. 755.

Maternal Mortality and the Mercurochrome Technic.—In a study of the maternal mortality following 15,647 deliveries, Mayes divides the cases into three groups of approximately 5,000 each. The first group, in which no vaginal antiseptic was used, covered a period from 1919 through 1924; the second, or experimental mercurochrome group, from 1925 through 1927; and the third group, with the latest mercurochrome technic, from 1928 to August, 1930. There were as many maternal deaths in the 5,000 deliveries before the use of mercurochrome as there were in the 10,000 following its use. If the cesarean sections are omitted, there were twice as many maternal deaths during the first 5,000 cases as there were during the last 5,000 cases, while with vaginal deliveries of children there were four times as many in the first series. The death rate from cesarean sections in the first group was 7.1 per cent, and in the second and third groups 2.6 per cent. Shock and hemorrhage accounted for 8 deaths in the first series, 2 in the second and 2 in the third. Eclampsia was given as the cause of 3 maternal deaths following the vaginal delivery of a viable child and 4 deaths following cesarean section in group 1, while in the mercurochrome series there was but one death from eclampsia in the vaginal deliveries of viable children. There were 17 deaths from sepsis in the first group, 9 in the second and 4 in the third. In the vaginal deliveries of viable children there were 6 deaths from puerperal sepsis in the first group, 8 in the second, and 1 in the third. Following cesarean section there were 7 deaths from sepsis in the first group, 1 in the second and 1 in the third. In the last group only one of the deaths followed the vaginal delivery of a viable child. One

followed cesarean section, and the third was a five and one-half months' miscarriage in which infection occurred before admission. On the basis of his observations, the author concludes that if puerperal sepsis accounts for one third to one half of all maternal deaths and is a preventable disease in which there has been no decrease during the last twenty-five years, it seems logical that the use of a vaginal antiseptic during labor and delivery might reduce the number of maternal deaths from this cause.

Age Distribution of Obstetric Patients. — Peckham reports that the mean age of 15,370 obstetric patients, divided almost equally between the white and black races, and containing primiparas and multiparas in almost equal numbers, is just under 24 years. A difference of 6.44 years exists between primiparas and multiparas. The mean age is significantly lower in black than in white primiparas (1.97 years); and an even greater variation was observed in the multiparas (3.15 years). The number of "young primiparas" (under 17) is greater among the black race, while fewer "elderly primiparas" (35 or over) are found. The child-bearing career seems to end earlier in the black than in the white woman. The ratio of operative to spontaneous deliveries at term is lower among black primiparas, despite a much higher incidence of contracted pelvis. Likewise, a higher percentage of pregnancies terminating prematurely is observed in this race. In both races the percentage of operative deliveries increases with age and in the white race reaches a point in the late thirties where it exceeds the spontaneous type. The probability of spontaneous termination of labor appears to be less good in very young women than in the age group of 17 to 19 years.

Eclampsia Without Convulsions or Coma.—Dieckmann and Wegner review an unusual case of eclampsia without convulsions or coma with especial reference to some of its most obvious clinical, laboratory and postmortem features. Attention is again called to the prime importance of establishing and maintaining blood dilution in eclampsia. The author suggests a possibly much more adequate therapeutic agent (acacia) for producing a more lasting hydration of the blood.

Analytic Study of Cesarean Section.—In an analysis of 1,000 cases of cesarean section in which either the classic operation or laparotrachelotomy was performed, Courtiss and Fisher found that the newer procedure is greatly superior in its lower mortality (1:5), its lessened unfavorable response to trial labor (1:13), and the much lower frequency of postoperative morbidity (1:10). They believe that when anatomic consideration or time factor does not necessitate reversion to the classic procedure, laparotrachelotomy is clearly the method of election.

Amenorrhea and Genital Hypoplasia.—In thirteen cases of amenorrhea accompanied by genital hypoplasia, Kurzrok and Ratner noted that the excretion of follicular hormone in the urine was slightly greater than normal. The administration of follicular hormone for therapeutic purposes did not produce either a cure or an improvement in the clinical condition.

Sedimentation and Ruge Virulence Tests.—Simunich observed an increase in sedimentation speed of sixty minutes or less in more than 50 per cent of 150 cases of inflammatory adnexitis and uncomplicated and complicated fibroids and carcinomas, and in about 23 per cent of other abdominal and vagino-abdominal pathologic conditions not of an inflammatory nature. The presence of virulent organisms is one of the most important causes of postoperative morbidity and mortality, but a doubtful or positive virulence test does not depend on the speed of sedimentation. The increase in sedimentation speed is due to some other factor than the virulence of organisms. The sedimentation test is not a reliable guide in the determination of the time for safe operation of adnexal disease. The Ruge virulence test is of value in the prognostication of postoperative morbidity and mortality if the operation takes place at the site of the organisms, usually the cervix. The author believes that the history, the leukocyte and differential counts, the temperature and the physical examination must remain the main guides in the determination of the time for safe operation in adnexal disease, while in cervical and combined cervico-abdominal operations the Ruge virulence test is of undoubted value. A doubtful or positive virulence test contraindicates cervical operations until such time as the test becomes negative.

Diagnosis of Gonorrhea in Women.—Jacoby emphasizes the fact that for the diagnosis of gonorrhea in women repeated smears should be taken and carefully examined. The use of the gram stain is not essential. In conjunction with a proper evaluation of the clinical examination, the methylthionine chloride stain is adequate for practical purposes. A positive smear is conclusive evidence of infection. A negative smear, even when repeated, does not exclude the presence of a gonococcal infection in women. Suspicious organisms, extracellular or intracellular, should be interpreted in accordance with the clinical evidence. Pure spreads of pus cells, even without organisms present, should be regarded as suggestive evidence of gonococcal infection. When cultures are taken and prove positive, they constitute conclusive criteria but are not practical or well adapted to routine practice. A negative culture does not exclude the presence of a gonococcal infection. The complement fixation test for gonorrhea with the present technic is unreliable. Neither positive nor negative results are conclusive. Unless an improved technic affording more reliable results is evolved, the fixation test should not be used for the diagnosis of gonorrhea or for the control of its treatment. Even under the most favorable conditions, it is apparent that laboratory procedures are of minor importance in establishing a diagnosis of gonorrhea in women. A wider appreciation of this fact, with a consequently greater reliance on the history and clinical evidence, will suggest the correct diagnosis in many of the now unrecognized cases of gonorrhea in women.

Annals of Internal Medicine, Ann Arbor, Mich.

5: 1337-1446 (May) 1932

Rheumatic Heart Disease: Review. C. T. Burnett, Denver.—p. 1337.
*Early Manifestations of Rheumatic Infections of Young Children. C. C. McLean, Birmingham, Ala.—p. 1357.
*Causes, Classification and Differential Diagnosis of Anemias: Based on Detailed Examination of Over Two Hundred Patients and Study of Literature. E. E. Osgood and H. D. Haskins, Portland, Ore.—p. 1367.
*Comparative Study of Use of Whole Liver, Liver Extract and Ventriculin. H. A. Freund and A. E. Price, Detroit.—p. 1377.
Raynaud's Disease Affecting Men. E. V. Allen and G. E. Brown, Rochester, Minn.—p. 1384.
Does Liver Therapy Benefit the Diabetic? E. L. Sevringhaus, Madison, Wis.—p. 1387.
*Primary Sclerosis of Pulmonary Artery: Report of Case. E. R. Pund and T. B. Phinizy, Augusta, Ga.—p. 1391.
*Gonococcal Endocarditis: Summary of Literature and Report of Case. A. M. Hoffman and F. C. Taggart, Los Angeles.—p. 1397.
*Significance of Lymphatic Tissue and Adenoma-Like Areas in Thyroid Gland. L. R. Himmelberger, Flint, Mich.—p. 1404.
*Pulmonary Lesions in Human Tularemia: Pathologic Review and Report of Fatal Case. S. D. Blackford, University, Va.—p. 1421.
Oliver Goldsmith, M.D. L. H. Roddis, Washington, D. C.—p. 1427.

Rheumatic Infections of Young Children. — McLean states that the early manifestations of rheumatic infections in children are characterized by an insidious onset. Such children are pale, easily fatigued, have poor appetites and are not gaining in weight as they should. Many complain of slight pains in the legs, feet or joints. There is often stiffness of the limbs or neck. Digestive disturbances with paroxysmal abdominal pains are common. There is a change in disposition. The children become irritable, nervous and peevish, and are easily frightened. Often there is a failure in mental concentration and they begin to drop objects and at times have difficulty in writing. There may be slight muscle twitching. Examination shows an anemic child who is irritable, nervous, excitable, high strung and usually underweight. The second heart sound is accentuated, with a soft blowing systolic murmur heard over the apex, that may or may not be transmitted. When the murmur is heard in a patient in whom it did not previously exist and is known to remain constant for at least a month, during which time the patient does not have elevation of temperature or acute infections, the diagnosis of a rheumatic infection is almost certain. Often no murmur is heard, but the heart action is rapid and the apex impulse exaggerated. The author emphasizes the fact that every child with early manifestations of rheumatic infections is a potential cardiac patient and should be managed accordingly.

Anemias.—Osgood and Haskins believe that the term "secondary anemia" should be discarded, as it is not sufficiently descriptive and anemias formerly grouped together under this term differ widely in etiology, symptomatology, blood changes and response to different types of therapy. An accurate diag-

nosis of the etiology is essential to the proper treatment of anemias. To facilitate this differential diagnosis, the authors present a table which gives the more important laboratory and clinical observations with the chief therapeutic indications in twenty-eight of the more important conditions that may cause or be confused with anemia. A cause for anemia may exist without the development of actual anemia, since it is possible for blood regeneration to keep pace with blood destruction or with hemorrhage. There are only three fundamental causes of anemia: deficient formation of red cells or hemoglobin, excessive destruction of red cells or hemoglobin within the body, and loss of red cells and hemoglobin from the body. These deserve more thorough study than they have previously received. Clinical anemias should be studied with the object of determining what is the relative part played by each of these fundamental factors in any individual case.

Whole Liver, Liver Extract and Desiccated Hog Stomach.—Freund and Price report a case of primary anemia which failed to respond to both desiccated hog stomach and liver extract but which later responded satisfactorily to the juice of whole liver. They draw attention to the fact that larger and increasing doses of antianemic substance were required to produce and maintain the desired blood level. It is suggested that in those cases which prove resistant to the usual "antianemic extracts," whole liver be given a trial. It is further suggested that large quantities of the antianemic substance be given before the case is considered refractory.

Primary Sclerosis of Pulmonary Artery.—On the basis of the history, clinical course and pathologic changes in a case they observed, Pund and Phinizy consider that the term primary sclerosis of the pulmonary artery is justifiably used. Such changes as were seen in the bronchi, lungs and heart were secondary to the sclerosis of the arteries. On some occasions the Wassermann reaction was positive, but syphilitic lesions were not found at necropsy and, although the necropsy was performed soon after death, Spirochaeta pallida was not found in the lungs or in the lesions of the arteries of the lungs. There was no significant etiologic factor brought to light in the history. The authors suggest that congenital hypertrophy of the media or faulty development may predispose the small pulmonary arteries to the obliterative changes that are observed in these cases.

Gonococcal Endocarditis.—Hoffman and Taggart summarize the literature on gonococcus endocarditis and review the eight authentic cases reported since 1922. To these they add another. The nine cases make a total of seventy-five proved cases of gonococcus endocarditis in the literature. The criteria of diagnosis are discussed. A positive diagnosis of gonococcal endocarditis can be made in the presence of clinical evidence of endocarditis only when intra vitam blood cultures are positive for gonococci or when cultures from postmortem lesions reveal the same organism.

Lymphatic Tissue in Thyroid.—It has been shown by Himmelberger that areas of lymphatic tissue occur in the thyroid in 2.8 per cent of infants. This tissue is found also in 2 per cent of thyroids from patients dying of diseases or accidents not involving the thyroid. Areas of lymphatic tissue occur in practically all thyroids removed surgically from patients with undoubted exophthalmic goiter. The lesion described is not the result of a local inflammatory reaction. The presence of lymphatic tissue in infant and selected necropsy specimens supports Warthin's contention of the existence of a "Graves constitution," that exophthalmic goiter is the clinical manifestation of a congenital constitutional anomaly. Warthin's conclusion that this lesion is diagnostic for exophthalmic goiter is vigorously supported. Adenomas have no causal relationship to the symptoms of thyroid disease since they occur with equal frequency in normal and pathologic glands. The use of the term should be abandoned in connection with the clinical diagnosis of hyperthyroidism. The author suggests a simple classification and diagnostic scheme of thyroid disease that is clinically and pathologically compatible.

Pulmonary Lesions in Tularemia.—Blackford reviews the reported effects of Bacterium tularense on the human lung and calls attention to the probable frequency and importance of these pulmonary manifestations. He presents a case with necropsy with the following observations of interest: 1. The probable source of the infection was an opossum. 2. The clinical diagnosis of pyogenic lung abscess was discredited by microscopic study of the tissue. 3. The pulmonary damage was extensive and of prime importance as a cause of death. 4. Multiple pulmonic thrombi, with attending areas of the necrosis, were probably attributable to the tularemic infection. 5. Gross caseous nodules were lacking in the liver and spleen.

Annals of Medical History, New York

4: 219-320 (May) 1932

How London and Edinburgh Influenced Medicine in Philadelphia in the Eighteenth Century: The S. Weir Mitchell Oration. F. R. Packard, Philadelphia.—p. 219.
Washington's Last Illness. F. O. Lewis, Philadelphia.—p. 245.
The Life and Times of Dr. William Harvey. W. Herringham, Hampstead, England.—p. 249.
Medicine in a Popular Medieval Encyclopedia. J. J. Walsh, New York.—p. 273.
St. Philip's Hospital in Charlestown in Carolina: Medical Care of the Poor in Colonial Times. J. I. Waring, Charleston, S. C.—p. 283.
Dr. Lydia Folger Fowler: Second Woman to Receive Degree of Doctor of Medicine in United States. F. C. Waite, Cleveland.—p. 290.
Pharmacology of Ancient Mexicans. D. Cerna, San Antonio, Texas.—p. 298.

Archives of Internal Medicine, Chicago

49: 713-878 (May) 1932

*Pain in Muscular Ischemia: Its Relation to Anginal Pain. T. Lewis, London, England.—p. 713.
*Auricular Fibrillation: Ambulatory Treatment with Quinidine. S. A. Weisman, Minneapolis.—p. 728.
Encephalopathy Due to Chronic Plumbism: Report of Case. T. S. Evans, New Haven, Conn.—p. 735.
Spontaneous Nephritis in Rabbit: Changes in Urine, Blood Metabolites, Phthalein Excretion and Blood Pressure in Group of Twenty Animals Followed for a Period of Three Years. F. R. Nuzum, A. H. Elliot and Blanche V. Priest, Santa Barbara, Calif.—p. 744.
Diagnosis of Syphilitic Aortitis Uncomplicated by Aortic Regurgitation or Aneurysm: Comparison of Clinical and Necropsy Observations in One Hundred and Five Patients. J. E. Moore, Baltimore; J. H. Danglade, Kansas City, Mo., and J. C. Reisinger, Washington, D. C.—p. 753.
Experimental Renal Insufficiency Produced by Partial Nephrectomy: I. Control Diet. A. Chanutin and E. B. Ferris, Jr., University, Va.—p. 767.
*Acute Bacterial Endocarditis Due to Bacterium Acidi-Lactici. L. Dickar, New York.—p. 788.
Effect of Histamine on Alkali Reserve and on Blood Sugar in Man. R. F. Hiestand, Cincinnati, and J. L. Hall, Chicago.—p. 799.
*Effect of Quinidine Sulphate in Inhibiting Ventricular Fibrillation: Experimental Study. H. D. Levine, Boston.—p. 808.
*Intrinsic Regulation of Gastric Acidity. S. L. Goldberg, Rochester, Minn.—p. 816.
Chemistry and Metabolism in Experimental Yellow Fever in Macacus Rhesus Monkeys: V. Acid-Base and Electrolyte Equilibrium. A. M. Wakeman and Clare A. Morrell, New York.—p. 826.
Proteolytic Leukocytic Enzyme in Leukemia: Study Made by Quantitative Method. Jean V. Cooke, St. Louis.—p. 836.
Chronic Gastric Ulcers: Histologic Observations on Factors Underlying Healing of Lesions Produced Experimentally in Rabbits. A. N. Ferguson, Chicago.—p. 846.
Correlation of Lingual Changes with Other Clinical Data. W. H. Oatway, Jr., and W. S. Middleton, Madison, Wis.—p. 860.

Pain in Muscular Ischemia.—Lewis states that if one accepts the idea that attacks of anginal pain are brought about by relative ischemia of the muscle, the relief of pain by nitrites may clearly come through a decrease of expenditure of energy, an increase of blood supply or by the joint effects of these two. On the basis of the theory of muscular ischemia, there is no difficulty in understanding why amyl nitrite fails to give relief in the pain of coronary occlusion. Similarly, in angina pectoris there is no difficulty in explaining why amyl nitrite may at times relieve pain without lowering the blood pressure, or why at other times the blood pressure may fall without relief until later. It is also easy to understand why, after the administration of amyl nitrite, the pressure may rise to a high point without causing pain, since the effects of increased coronary flow on the muscle may long outlast the action of the drug. Lastly, it enables one to explain on similar lines why attacks that would otherwise last ten minutes or more are brought to an abrupt and complete end by the inhalation, the direct effects of which are notoriously quite transient.

Auricular Fibrillation.—Weisman reports twenty-eight cases of auricular fibrillation in which the patients were treated with quinidine; four did not continue treatment, so that only twenty-four were treated satisfactorily by the ambulatory method. In seventeen cases, 70.8 per cent of the twenty-four in which treatment was satisfactory, normal rhythm was

restored. Of the successfully treated patients, four had rheumatic valvular heart disease, ten had hypertension and coronary sclerosis, one had diabetes and hypertension, one had syphilitic aortitis, and one had an apparently normal heart. Eighteen of the twenty-four patients were 50 years of age or over; in fourteen of this group, or 77 per cent, the heart was restored to regular rhythm. In three of the remaining six patients, regular rhythm was restored. The group with hypertension seemed to respond more quickly than the rheumatic group. In all but one there was chronic fibrillation for from two months to ten or twelve years. In the treatment, small doses of quinidine were given to start with; then the dose was gradually increased. Tincture of digitalis was always given first or in conjunction with quinidine during treatment. Two accidents occurred during treatment: one death from coronary thrombosis and a case of hemiplegia.

Bacterial Endocarditis.—Two cases of Bacterium acidilactici endocarditis, closely resembling cases of infection with Bacterium coli, are reported by Dickar because of their rarity. He believes that more complete bacteriologic studies of cases of Bacterium coli sepsis will undoubtedly bring to light more examples of Bacterium acidi-lactici infections. The coincidence of aortic valve involvement in two cases of Bacterium acidi-lactici endocarditis and in two cases of Bacterium coli endocarditis is pointed out.

Inhibition of Ventricular Fibrillation.—In a series of thirty-six experiments performed on cats, Levine found that quinidine sulphate definitely inhibited the facility with which ventricular fibrillation could be produced by faradic stimulation. It was also found that this effect could not be attributed to manipulation of the heart and the resulting fatigue of the muscle or to the time consumed in the experiments. The author suggests that these results offer a rational background for proper quinidine therapy as a method of preventing sudden death in those conditions in which ventricular fibrillation is prone to occur.

Intrinsic Regulation of Gastric Acidity.—Goldberg presents experimental evidence to show that intragastric regulation of acidity is probably brought about by three factors: (1) reduction of the concentration of secreted hydrochloric acid when intragastric acidity has reached a certain level, and, as its corollary; (2) secretion of neutral chloride by the stomach, which plays a rather minor part by dilution, and (3) a combination of gastric mucin or an unknown substance with free acid.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

13: 261-316 (May) 1932

Use of Water in Therapeutics. J. B. Nylin, Philadelphia.—p. 261.
Physical Therapy in Dermatology: Appraisal Based on Results in Practice. H. J. Parkhurst, Toledo, Ohio.—p. 272.
The Audiometer as an Aid in Diagnosis of Impaired Hearing. G. H. Mundt, Chicago.—p. 289.
Is Physical Therapy an "Adjunct" Only? O. M. Moore, York, Neb.—p. 295.

Archives of Surgery, Chicago

24: 715-892 (May) 1932

*Sodium Amytal: Analysis of Intravenous Use in One Hundred and Seventy-Two Surgical Operations. H. Cabot, Rochester, Minn., and W. G. Maddock and H. Lamb, Ann Arbor, Mich.—p. 715.
*Pathogenesis of Hypernephroma. J. Gottesman, D. Perla and J. Elson, New York.—p. 722.
*Pathogenic Gas-Producing Anaerobic Bacilli in Chronic Ulcers. M. H. Manson, Minneapolis.—p. 752.
*Acute and Subacute Atrophy of Liver and Evolution of Toxic Cirrhosis: Review of Twenty-Two Cases. E. S. Judd and D. C. Beaver, Rochester, Minn.—p. 775.
*Osteogenic Sarcoma. C. F. Geschickter, Baltimore.—p. 798.
Avertin Fluid Anesthesia in Surgery. K. Schlaepfer and L. M. Peters, Milwaukee.—p. 868.
Forty-Seventh Report of Progress In Orthopedic Surgery. P. D. Wilson, M. Smith-Peterson, L. T. Brown, J. G. Kuhns, E. F. Cave and S. M. Roberts, Boston; R. K. Ghormley, Rochester, Minn.; J. E. Milgram, New York; J. A. Freiberg, Cincinnati, and G. Perkins, London, England.—p. 881.

Sodium Amytal.—Cabot and his associates discuss the results they obtained by the intravenous use of sodium amytal in 172 surgical operations. As the drug was slowly injected, in from three to five minutes the patients passed gradually, quietly and surely into what appeared to be a normal deep sleep. No stage of excitement was observed. The pupils contract early and will not react to light. At first the patient can be aroused by a needle prick or shaking. As the administration is continued, these stimuli become less effective to a point simulating profound anesthesia. During the administration of sodium amytal the pulse rate increased in 124 cases an average of 15 a minute; in 25 cases there was an average decrease of 12 a minute; in 23 cases there was no change. In 100 cases the respiratory rate increased an average of 5.7 a minute; an average decrease of 4.3 a minute occurred in 31 cases. There was no change in 41 cases. The patient's color remained good if an effort was made to keep the upper respiratory passage unobstructed by holding up the jaw and inserting a breathing tube. A fall in blood pressure occurred in 166 cases during the administration of the drug, the average systolic reduction being 27 mm. of mercury, while the average diastolic reduction was 15 mm. Six cases showed a slight tendency toward increase in both systolic and diastolic pressures. There was distinctly less change in the patient's blood pressure if it was normal before the administration of the anesthetic, while persons with hypertension or hypotension showed a much greater reduction. The ordinary operative trauma was a decided stimulus to the return of the blood pressure to normal. As a routine the operation was started within from three to five minutes from the time of completion of the administration of the drug. Into the skin and parietal peritoneum a local anesthetic was usually injected before incision. No inhalation anesthetic was given until requested by the surgeon because of (1) occasional poor relaxation, (2) a tendency for the patient to squirm under the stimulus of the incision, or (3) handling of the viscera. Sodium amytal alone was entirely satisfactory in 42 of the cases. In 21 cases of this group, major abdominal operations were performed. The intestine appeared to be collapsed and could be packed away from the operative field with more than the usual ease. Exposure was ideal. There was no increased tendency toward bleeding or oozing. Facilities for closure were perfect. The effect lasted well beyond the average time for the operation. The remaining 130 cases required an additional anesthetic agent. On the basis of their observations the authors draw the following conclusions: 1. Sodium amytal given intravenously is a satisfactory addition to the anesthetic armamentarium. 2. It is an exceedingly agreeable form of anesthetic from the patient's point of view. 3. In consideration of the fact that 75 per cent of the patients required an additional anesthetic, the authors raise the question as to whether smaller doses of sodium amytal plus the additional anesthetic would not be just as satisfactory as their nearly maximal dose. This would effect a decrease in the length of time of postoperative narcosis and its consequent possible complications.

Hypernephroma.—Gottesman and his associates present an analysis, from a clinical and pathologic point of view, of forty-four cases of hypernephroma. In sixteen of these, the tumor was a chance observation at necropsy. The authors state that the neoplasm may exist for many years prior to the onset of symptoms. There is extreme variation in the interval between the onset of symptoms and the death of the patient from the neoplasm. In about half of the cases the primary symptoms of neoplasm were referable to metastatic lesions, such as those of the pelvis, skull, long bones, vagina and lungs. The existence of a primary malignant neoplasm of the kidney with metastatic foci may exist for some time prior to the development of any symptoms. All gradations from a benign structure to a malignant hypernephroma were found in the same tumor. All types of histologic variations may occur in the same tumor, such as a cortical adenoma, a typical hypernephroma, papillary and adenomatous forms and highly malignant carcinoma and sarcoma-like infiltrations. Comparative studies emphasize the histogenetic development of a hypernephroma from cortical aberrant tissue. Cortical suprarenal rests in the kidney may grow into benign adenomas. At any period during the life of the patient, such benign structures may become malignant. This development and subsequent metastatic dissemination proceeds at a variable rate.

Anaerobic Bacilli in Chronic Ulcers.—Manson reports two cases in which gas gangrene followed amputation of extremities that were the site of chronic ulcers. Their similarity led to the question of the relationship of chronic ulcers and gas gangrene and the frequency with which ulcers harbor pathogenic anaerobes. Cultures of thirty-two ulcerating lesions

revealed that eleven, or 34.37 per cent, harbored pathogenic gas-producing anaerobes. Fifty-two control cultures of normal skin yielded four cultures (7.6 per cent) of Clostridium welchii. Clostridium welchii is the most frequent pathogenic anaerobe found in chronic ulcers. Gas gangrene complicating preexisting gangrene has previously been emphasized, and it is suggested that vigilance be extended to include chronic ulcers as a possible source of gas gangrene following surgical intervention. The possible routes of infection are discussed and it is believed that the most likely explanation is that the organisms were in the tissues prior to amputation. This opinion is speculative and requires definite evidence to corroborate it. Polyanaerobic and Bacillus perfringens antitoxin has definite merit and should be more widely used. The author suggests that cultures should be taken of chronic ulcerating lesions, by the use of milk as a medium, if surgical intervention is to be directed to their removal. If the characteristic stormy fermentation produced by Clostridium welchii is obtained, anaerobic antitoxin should first be administered.

Atrophy of Liver.—Clinical and pathologic study made by Judd and Beaver of twenty-two cases of atrophy of the liver revealed a common pathogenesis but probable widely differing etiology. The lesion begins in relatively rapid atrophy of the liver, and, according to severity and rapidity of the atrophy and associated changes, may be revealed as an anatomically acute, subacute or chronic lesion. Progression into the chronic stage is dependent not only on a relatively less severe destruction of hepatic parenchyma but on the capacity of the hepatic cells to regenerate. The clinical course of the disease is frequently impossible of pathologic correlation, owing to the somewhat latent appearance of the clinical manifestations; however, in a general way the disease exhibits gradations in symptomatic severity and duration similar to those suggested by the pathologic anatomy of the liver. The most constant symptom presented in these cases is jaundice. Ascites is somewhat latent in its development but is usually shown when the lesion has reached chronicity. The occurrence of pain in the course of this disease, simulating colic originating in obstruction from biliary calculi, has been emphasized. By far the greater number of patients live to reach the clinically and anatomically subacute and early chronic stages. Death from acute hepatic atrophy, so far as pathologic anatomy reveals it to be acute, is exceedingly rare. In some cases, the end or healed stage of the lesion is reached; this stage presents the characteristics of the type of cirrhosis that Mallory has designated "toxic cirrhosis."

Osteogenic Sarcoma.—Geschickter believes that the current conception of the typical sarcomatous history given by patients with malignant disease of the bone is in need of definite revision. A youthful patient and a brief acute clinical course are not indispensable to the diagnosis, and it can no longer be maintained that a prolonged history and advanced age rule out this dread disease. It has been shown that there are definite types of osteogenic sarcoma which arise in adults who may give a history of a preceding trauma dating back from two to twenty-five years. These are cases of secondary chondromyxosarcoma arising at the site of an exostosis or benign central chondroma, the osteolytic sarcoma which arises centrally in adults with an obscure complaint at the site of the malignant change, or the secondary sclerosing forms following on myositis ossificans and in callus after fracture. In these cases the unusual clinical aspects can be explained on the basis of a sarcoma arising from a previously benign condition, which either harbors undifferentiated embryonic tissue or is the seat of a chronic unhealed lesion. The clinician, therefore, must be on the lookout for these secondary malignant forms of osteogenic tumors, which in the roentgenograms are central bone-destructive lesions of an infiltrative type (arising in a bone which gives evidence of a previous exostosis, an expansile deformity caused by central chondroma or an old unhealed site following infection or trauma) or invasive periosteal growths (following on Paget's osteitis deformans, myositis ossificans or callus formation). While these tumors are definitely sarcomatous, they offer a better prognosis than the primarily malignant osteogenic tumors and, in grading, constitute a distinct group. The fundamental basis of interpreting lesions of the bone in the roentgenogram is also in need of revision. There is too much overlap in the roentgenologic picture between benign and malignant conditions if one looks on the film as presenting only the configuration of the result of the disease process. It is necessary to pass beyond the reliance placed on mere configuration and analyze the film as a dynamic record of both normal osteogenesis and a malignant perversion of some phase of this osteogenesis. The fact that osteogenic sarcoma may sometimes give rise to a central osteolytic lesion in the roentgenogram and in other instances sclerose the marrow cavity, that under certain conditions it may be predominantly a periosteal lesion and again be predominantly central, emphasizes the necessity of interpreting the roentgenogram in relation to the phase of osteogenesis involved by the tumor rather than attributing these contrasting pictures to chance or to an indefinable complexity.

California and Western Medicine, San Francisco

36: 305-376 (May) 1932

Activities of California Medical Association During 1931: Address of Retiring President. J. B. Harris, Sacramento.—p. 305.
Correction of Losses and Deformities of External Nose, Including Those Associated with Harelip. V. P. Blair, St. Louis.—p. 308.
*Abdominal Section, with Preservation of Diaphragmatic Function and Without Postoperative Pain or Adhesions. J. F. Percy, Los Angeles.—p. 314.
Sodium Amytal: Its Value in Seasickness. H. Hamilton, Honolulu, Hawaii.—p. 317.
What to Eat on Going to Bed. L. L. Stanley and G. L. Tescher, San Quentin.—p. 318.
Fractures of the Os Calcis. M. C. Harding, San Diego.—p. 319.
Favus in California: Report of Case Due to Strain Pathogenic for Mice. S. C. Way, San Francisco, and F. D. Weidman, Philadelphia.—p. 322.
Chronic Kidney Infections in Infants and Children: Report of Cases. W. M. Happ, Los Angeles.—p. 326.
Coronary Sclerosis: As Seen in Coroner's Office. A. A. Berger, San Francisco.—p. 332.
Free Skin Grafts of Less Than Full Thickness: Causes for Their Failure or Success. J. H. Woolsey, San Francisco.—p. 334.
Preoperative Medication. Caroline B. Palmer, San Francisco.—p. 337.
Essays on the History of Embryology. A. W. Meyer, San Francisco.—p. 341.

Abdominal Section.—Percy emphasizes the importance of preventing, while the abdomen is open, the slowing up of the circulation in the posterior abdominal and thoracic veins, thus inevitably disabling the heart. He believes few surgeons realize sufficiently that the instant air is let into this visceral cavity the rhythmic respiratory contractions of the abdominal muscles and the diaphragm, which play such an important part in the circulation of the blood, are lost. Under such conditions, and especially if the operation is prolonged, blood accumulates in the great posterior abdominal and thoracic veins because these two most important and efficient circulatory muscular units go out of commission with the opening of the abdomen. When the heart has lost this almost indispensable support it gradually becomes fatigued and the circulation fails. At this point one frequently finds the anesthetist attempting to whip it into better action with heart stimulants, often with disappointing if not disastrous results. The technic necessary for preserving the circulatory functions of the diaphragm and of the abdominal muscles following the opening of the abdomen is extremely simple. The essential thing is the employment of a single long, dry gauze sponge to keep the liver and surrounding viscera crowded up under the dome of the diaphragm. (The sponge or pack is made from ordinary surgical gauze. The author has found that a useful average as to length is 15 yards, or 13.72 meters, with a width of 9 inches, or 23 cm. The latter is obtained by folding the gauze lengthwise four times). When well done, this compensates for the removal of the tone of the abdominal wall. Important as subsidiary aids to the sponge technic is adequate spinal anesthesia with an added general anesthesia when relaxation of the abdominal muscles is not satisfactory, the Trendelenburg position and a completely expanded long abdominal incision. The correct manner of introducing the sponge into the upper part of the abdomen is the key to its value. Not only does it serve as a pack in restoring the auxiliary circulatory functions of the diaphragm and abdominal muscles, but also, when placed without traumatizing the peritoneum in the slightest degree, it precludes the development of gas pains and the later dreaded adhesions.

Florida Medical Association Journal, Jacksonville

18: 497-546 (May) 1932

President's Address. G. H. Edwards, Orlando.—p. 505.

Georgia Medical Association Journal, Atlanta

21: 177-218 (May) 1932

Economic Drift of Modern Medicine. A. G. Fort, Atlanta.—p. 177.
Ritter's Disease: Dermatitis Exfoliativa Infantum: Keratolysis Neonatorum: Case Report. B. C. Teasley, Hartwell.—p. 180.
Plastic Operation for Anal Incontinence. L. Grove, Atlanta.—p. 182.
Surgery in Diabetes. F. A. Smith, Elberton.—p. 184.
Polycystic Kidney Disease: Report of a Familial Series. E. A. Bancker, Jr., Atlanta.—p. 187.
Chronic Purulent Otitis Media. J. A. Smith, Macon.—p. 190.
Cesarean Section: Case Reports. C. E. Wills, Washington.—p. 193.
Paroxysmal Ventricular Tachycardia: Case Treated with Quinidine Sulphate. W. C. Waters, Jr., Atlanta.—p. 194.
Surgical Treatment of Pulmonary Tuberculosis. L. Fort, Atlanta.—p. 196.
Paranasal Sinus Infection: Lower Respiratory Tract Manifestations. T. S. Burgess, Atlanta.—p. 199.

Journal of Allergy, St. Louis

3: 325-422 (May) 1932

Study of Calcium, Phosphorus and Potassium of Serum and Spinal Fluid in Asthma. D. M. Lierle and R. A. Sage, Iowa City.—p. 325.
*Recent Observations in Study of Asthma Due to Food Allergy. A. V. Stoesser, Minneapolis.—p. 332.
Allergically Active Substance in Pollen: Chemical and Biologic Study of Phleum Pratense (Timothy) Pollen. A. Stull, R. A. Cooke and R. Chobot, New York.—p. 341.
*Biologic Identity of Certain Grass Pollens Causing Hay Fever. A. Stull, R. A. Cooke and J. H. Barnard, New York.—p. 352.
Ragweed Season of 1931; Third Annual Atmospheric Survey. O. C. Durham, North Chicago, Ill.—p. 357.
Physical Allergy: Localized and Generalized Allergic Type of Reaction to Cold: Case. G. W. Bray, London, England.—p. 367.
Botanic Survey of San Joaquin County in Central California. A. H. Rowe, Oakland, Calif.—p. 375.
Asthma Due to Mold: Hypersensitivity Due to Cladosporium Fulvum, Cooke: Case Report. H. M. Cobe, Philadelphia.—p. 389.
Importance of Medical Social Service in Asthma Clinics. W. C. Spain, New York.—p. 392.
Climatic Asthmas. C. Jimenez-Diaz, B. S. Cuenca and J. Puig, Madrid, Spain.—p. 396.
*Dermatitis Venenata Due to Chrysanthemums: Report of Case in a Florist. I. Pilot, Chicago.—p. 404.
Treatment of Physical Allergy: Treatment of Heat and Effort Sensitiveness and Cold Sensitiveness and Treatment of Contact Urticaria Caused by Light, Cold and Scratches. W. W. Duke, Kansas City, Mo.—p. 408.

Asthma Due to Food Allergy.—An allergic individual responding to the ingestion of codfish with an asthmatic reaction was kept by Stoesser under close observation for a short time. It was noted that, when the patient was on a ketogenic diet with a fair amount of fluid intake, no protection against the asthmatic attacks was obtained. A high carbohydrate diet gave little protection. When the water intake was low in connection with the ketogenic diet, the reaction was worse and the same was true in the case of the high carbohydrate diet. When the patient was on a high fluid intake in connection with the relatively high carbohydrate diet, full protection was obtained while the patient was up and about indoors, but this failed when the patient became quite active outdoors, and later an infection of the upper respiratory tract developed. The administration of a solution of dextrose was just as effective in controlling the allergic reactions in this case as epinephrine. Severe asthmatic attacks required intravenous injections of dextrose, while the mild attacks could be taken care of with dextrose, which was given orally. The effect of dextrose is most interesting in that epinephrine, which has long been used to control allergic reactions, also raises the blood sugar.

Grass Pollens Causing Hay Fever.—Stull and his associates report that the results of experiments together with an extensive clinical experience of fourteen years in the treatment of grass pollen sensitive cases with timothy extract alone led them to believe that in all respects the active substance of these grass pollens is a single substance and is common to all the extracts.

Dermatitis Venenata Due to Chrysanthemums.—Pilot reports a case of dermatitis venenata due to chrysanthemums (pompons). The leaves were largely the irritating factors. By patch test the other soluble fraction of the leaves gave positive reactions. The water soluble fraction containing most of the protein gave no reaction. Passive transfer was unsuccessful. The author states that dermatitis venenata due to chrysanthemums is an example of marked skin sensitiveness, such as is observed in rhus and primrose dermatitis.

Journal of Industrial Hygiene, Boston

14: 159-206 (May) 1932

*Effects of Prolonged Exposure to Sulphur Dioxide. R. A. Kehoe, W. F. Machle, K. Kitzmiller and T. J. LeBlanc, Cincinnati.—p. 159.
Cadmium Poisoning: II. Experimental Cadmium Poisoning. L. Prodan, Boston.—p. 174.
Reactions of the Organism to Repeated Electric Shocks. O. R. Langworthy and W. B. Kouwenhoven, Baltimore.—p. 197.

Exposure to Sulphur Dioxide.—Kehoe and his associates found a significantly higher incidence of nasopharyngitis, both chronic and slight, of alteration in sense of smell and sense of taste, and of increased sensitivity to other irritants in a group of workers exposed to sulphur dioxide. These may be thought of as conditions arising from local irritation. A significantly higher incidence of abnormal urinary acidity, of tendency to increased fatigue, of shortness of breath on exertion, and of abnormal reflexes was found in the exposed group. These are in the nature of systemic symptoms. There was no demonstrable association between frequency or severity of initial symptoms and frequency of heavy exposure, nor was there any relation between exposure and the frequency and severity of symptoms arising from the customary exposure. A positive relation exists between frequency of heavy exposure and presence of certain symptoms indicative of acid accumulation; namely, increased fatigability during the period of employment, and shortness of breath on exertion. The incidence of colds is not significantly different in the two groups. The duration, however, is extended in the exposed group. In all other respects there was no significant difference between the exposed group and a control group.

Journal of Lab. and Clinical Medicine, St. Louis

17: 731-842 (May) 1932

Respiration of Micro-Organisms. F. G. Novy, Ann Arbor, Mich.—p. 731.
*Comparative Statistical Study of Frequency of Asymptomatic Ringworm as Occurring in More Common Cutaneous Affections. A. Strickler and R. P. Zalatel, Philadelphia.—p. 748.
*Carbohydrate in Treatment of Postoperative Tetany, with Especial Reference to Lactose. E. P. McCullagh and D. R. McCullagh, Cleveland.—p. 754.
Comparison of Vasoconstrictive Action of Adrenalin and Ephedrine Added to Local Anesthetic Solution. W. R. Meeker, Mobile, Ala.—p. 773.
Studies in Serology of Syphilis: VII. Supposed Artificial Induction of Positive Wassermann Reaction in Originally Negative Human Serums. H. Eagle, Baltimore.—p. 778.
Id.: VIII. New Flocculation Test for Serum Diagnosis of Syphilis. H. Eagle, Baltimore.—p. 787.

Frequency of Asymptomatic Ringworm.—Strickler and Zalatel examined 185 patients with various skin diseases for the presence of ringworm fungi in the interspaces of the feet, both by the extemporaneous method and by culture on Sabouraud's medium. Of this number, 92, or 49 per cent, were proved positive for fungi on microscopic examination and 93, or 51 per cent, negative. Only in 4 instances, or 2 per cent, could a positive ringworm growth be obtained on Sabouraud's medium. Forty-five patients with acne vulgaris were studied. Of this number, 27, or 60 per cent, were negative for fungi by the extemporaneous method, while 18, or 40 per cent, were positive. Out of the 45 there was only 1 case which gave a positive ringworm growth on Sabouraud's medium. Fourteen patients with eczema were studied with the following results: Three, or 22 per cent, were positive for fungi by the microscopic method, and 11, or 78 per cent, were negative. All failed to give a ringworm growth on Sabouraud's medium. Eight patients with either psoriasis or lichen planus were studied, and of this number 12.5 per cent showed positive microscopic observations and 87.5 per cent negative results. Ten patients with seborrheic dermatitis were examined. Of this number 5, or 50 per cent, were positive for fungi by microscopic examination and 5, or 50 per cent, negative. All failed to yield positive cultures on Sabouraud's medium. Patients with various forms of dermatitis, scabies or tumors showed about an equal proportion of positive and negative microscopic observations. While the general average of positive fungus observations by microscopic examination was 49 per cent for the entire series, the eczema group yielded only 20 per cent positive results, acne vulgaris 40 per cent, but the seborrheic dermatitis group gave 50 per cent positive. Although this series is rather small on which to base definite conclusions, it would appear that the eczema patients seem to offer

the least favorable soil for asymptomatic epidermophytosis and seborrheic dermatitis patients the most favorable environment. An important lesson to be drawn from this study is the need for a test, cutaneous or otherwise, through which the potential, latent pathogenic powers of the fungi of asymptomatic ringworm fungus infection could be determined. By such a method it would also be possible to reconcile the discrepancies between the cultural and microscopic observations in asymptomatic mycosis.

Postoperative Tetany.—The McCullaghs report that the symptoms of chronic parathyroid tetany may be lessened in severity or completely controlled by lowering the amount of inorganic phosphates in the blood without raising the total calcium content of the blood serum. Dextrose temporarily lowers the amount of inorganic phosphates in the blood of normal subjects and in individuals with chronic parathyroid tetany. Lactose in single doses has the same effect as dextrose. Galactose in single doses has no effect on the inorganic phosphate content of the blood. After ingestion of dextrose or of lactose there is a decrease in the amount of phosphate excreted in the urine. This does not occur after the administration of galactose. Three cases of chronic parathyroid tetany are reported in which symptoms were present in spite of the oral administration of large doses of calcium lactate. The addition of lactose resulted in complete relief, associated with a lowering of the phosphate content of the blood. One case of chronic parathyroid tetany is reported in which large doses of calcium lactate alone failed to give complete relief and very large doses of parathyroid extract alone failed to give relief. The symptoms could be controlled by the oral administration of large doses of calcium lactate, together with the subcutaneous injection of parathyroid extract. Calcium lactate in large doses in combination with lactose gave relief without the addition of parathyroid extract.

Journal of Nutrition, Springfield, Ill.

5: 213-324 (May) 1932

Effects of Low Environmental Temperature on Metabolism: I. Technic and Respiratory Quotient. R. W. Swift, Rochester, N. Y.—p. 213.
*Id.: Influence of Shivering, Subcutaneous Fat, and Skin Temperature on Heat Production. R. W. Swift, Rochester, N. Y.—p. 227.
Some Effects of Restricted Protein Intake on Estrous Cycle and Gestation in Rat. H. R. Guilbert and H. Goss, San Francisco.—p. 251.
Method of Determining Biologic Value of Protein in Study of Avian Nutrition. J. L. St. John, O. Johnson, J. S. Carver and S. A. Moore, Pullman, Wash.—p. 267.
*Utilization by Human Subjects of Nitrogen, Calcium and Phosphorus of Navy Bean (Phaseolus Vulgaris) With and Without Supplement of Cystine. Martha S. Pittman, Chicago.—p. 277.
*Value of Some Vegetables in Nutritional Anemia. H. Levine, F. B. Culp and C. B. Anderson, Charleston, S. C.—p. 295.
Relative Quantities of Heat-Stable and Heat-Labile Fractions of Vitamin B in Raw and Evaporated Milk. L. T. Samuels and F. C. Koch, Chicago.—p. 307.

Effects of Low Temperature on Metabolism.—From a study of the data obtained on twenty-one human subjects in a basal condition, exposed to an environmental temperature of about 2 C. for an hour and a quarter, Swift draws the following conclusions: 1. There is no change in the protein metabolism corresponding to the increase in energy metabolism. 2. The blood sugar level remains unchanged, indicating that increased epinephrine secretion is not involved. 3. There is no parallelism between the energy metabolism and pulse rate or respiratory rate, but distinct parallelism between heat production and respiratory volume. 4. The reaction to cold in a general way varies inversely as the amount of subcutaneous fat. 5. The increase in energy metabolism considered with the time spent in shivering shows that intense shivering increases the metabolism about 400 per cent. 6. The increase in metabolism shows no relationship to surface area. 7. The heat production is proportional to the amount and the intensity of shivering, and any increase in metabolism not accompanied by definite shivering may be justly ascribed to increased muscular tension. 8. The stimulus for shivering does not consist of even a slight drop in body (rectal) temperature. 9. Shivering begins when the skin attains a temperature of approximately 19 C. (66.2 F.).

Utilization of Nitrogen, Calcium and Phosphorus of Navy Bean.—Pittman reports the results of a study of the utilization of the nitrogen, calcium and phosphorus of the navy bean. Five adult women served as subjects. The beans were cooked in two ways—as bean purée and baked beans. They were eaten with and without a supplement of cystine in the proportion of 2 per cent of the weight of the calculated protein. The diet—consisting of beans, purified butter fat, sucrose, lactose, grape juice and lemon juice—was presumably adequate except for some deficiency of vitamin D. The following tendencies were observed: The trend of the nitrogen balance was increasingly negative while the beans were eaten without the cystine supplement. Addition of cystine in the proportions mentioned, although showing some irregularities, apparently improved the nitrogen retention slightly. The calcium and phosphorus of navy beans in the amounts used were, as a rule, unable to maintain the balance of these elements in the body. The phosphorus was utilized somewhat better than the calcium and showed a slightly favorable response to addition of cystine. Improved utilization of the phosphorus in most cases appeared to parallel better retention of nitrogen. No such correlation was noted between calcium and nitrogen or calcium and phosphorus. The methods of cooking used apparently had little effect on the usage of the elements studied. Navy beans seemingly can be eaten in comfort by healthy people in quantities at least as large as 4 ounces, dry weight, daily. The author concludes that her work on human subjects appears to support the observations of others that navy beans are not entirely satisfactory as the chief source of nitrogen in the diet.

Vegetables in Nutritional Anemia.—Levine and his associates studied the influence of various dried vegetables in the cure of nutritional anemia. They noted that dried spinach, when fed ad libitum and yielding an average daily intake of 0.43 mg. of iron and 0.0061 mg. of copper, effected hemoglobin regeneration in from three to four weeks. Lettuce plus tomato mixture, asparagus, lettuce, spinach and broccoli—all fed at a level affording 0.2 mg. of iron but different amounts of copper—permitted hemoglobin regeneration in from four to five, five to six, six to seven, six to seven and seven to eight weeks, respectively, in the order of decreasing copper intake. Since variations in the iron and copper content of these vegetables are known to exist, it is to be borne in mind that a different order of antianemic potency would probably result from another set of the same vegetables. Turnip greens fed at a level furnishing 0.425 mg. of iron and 0.0179 mg. of copper brought about rapid regeneration in from three to four weeks. When fed at the same level of iron, a lettuce and tomato combination was found more effective than lettuce alone. These vegetables are therefore important sources of the minerals concerned in normal blood formation. Iron alone or copper alone, when fed in the form of inorganic salt solutions, permitted only partial blood regeneration, whereas solutions containing both iron and copper effected rapid recovery of hemoglobin.

Journal of Pharmacology & Exper. Therap., Baltimore

45: 1-119 (May) 1932

Preliminary Observations with Theophylline Mono-Ethanolamine. A. L. Chen, Indianapolis.—p. 1.
Mechanism of Ovulation in Rabbit: IV. Quantitative Observations on Action of Extracts of Urine of Pregnancy. M. H. Friedman, Philadelphia.—p. 7.
Purification and Some Properties of Insulin. T. D. Gerlough and R. W. Bates, New Brunswick, N. J.—p. 19.
Effect of Barium Chloride on Salivary Secretion. G. W. Stavraky, Montreal, Canada.—p. 53.
Studies on Coronary Arteries of Human Heart. W. B. Kountz, Cairo, Egypt.—p. 65.
Intact Intestine in Nonanesthetized Dogs as Influenced by Colocynth and Podophyllin. C. M. Gruber, L. K. Richardson and W. T. K. Bryan, St. Louis.—p. 77.
*About the Fate of Free Iodine on Application to Unbroken Animal Skin: Experimental Study. W. Nyiri and Marie Jannitti, Newark, N. J.—p. 85.
Note on Absorption, Serum Concentration and Narcotic Effects of Magnesium. E. Neuwirth and G. B. Wallace, New York.—p. 109.
Action of Certain Drugs on Oviduct of Domestic Fowl. F. D. McKenney, H. E. Essex and F. C. Mann, Rochester, Minn.—p. 113.

Fate of Iodine on Application to Skin.—Nyiri and Jannitti consider the fate of free iodine on application to the unbroken animal skin. The experiments were made on rabbits and dogs and gave the following results: 1. Free iodine penetrates through the unbroken skin. This penetration takes place only in the form of compounds. Iodine on external application was detected in the urine of dogs, on the inner surface of the pouched rabbit skin, and in the efferent blood vessels of the perfused isolated rabbit ear. 2. Quantitative

experiments made on rabbits concerning penetration, absorption and evaporation of iodine offer a fair conception concerning the fate of iodine applied to the surface of animal skin. Approximately 88 per cent of the iodine evaporates from the surface within three days. The rate of evaporation is highest within the first few minutes after application. Within the first two hours, 50 per cent of the material escapes into the air; at the end of twenty-four hours the loss amounts to about 75 to 80 per cent; only small amounts evaporate during the third day. The evaporation ceases after this time. The rest, approximately 12 per cent, is at the disposal of the body and penetrates through the skin. The removal of this 12 per cent into the body is very gradual. Only 1 to 4 per cent is absorbed within the first few hours. The rest forms a depot in the skin from which about 5 to 6 per cent is taken up within three days. The remaining 3 to 5 per cent is gradually absorbed after this time. 3. Following application to the skin of the dog, from 1 to 3 per cent of iodine is excreted in the urine within three days. Although this percentage is very low, it suggests that the fate of iodine in the dog is similar to that in the rabbit, considering the slow rate of urinary excretion following various modes of administration, and the marked iodine storing power of the body. 4. The percentage of iodine penetration through the skin is the same, irrespective of whether the cells have a high or low vitality, or are dead, and irrespective of the direction of penetration. Activity of the cells, therefore, does not seem to be indispensable for the penetration of iodine. 5. The fate of iodine in all the experiments was the same whether iodine was applied to the skin in the form of an alcoholic solution or in colloidal suspension. 6. When the isolated ear and isolated kidney of rabbits are perfused at a moderate rate with a solution containing free iodine, the iodine is quantitatively reduced to iodides. The data presented by the authors serve as experimental evidence for the penetration of iodine through the unbroken animal skin.

New England Journal of Medicine, Boston

206: 1027-1074 (May 19) 1932

*Roentgenologic Consideration of Mitral Heart Disease. W. D. Reid and G. Levene, Boston.—p. 1027.
Doctor, Medical Society, Layman and State. D. Cheever, Boston.—p. 1032.
Epidermophytosis (Athlete's Foot): A Cause of Serious Streptococcal Infections. J. Homans, Boston.—p. 1038.
Large Cyst of Orbit: Case Report. J. W. Crawford, North Adams, Mass., and E. Kellert, Schenectady, N. Y.—p. 1041.
Report of Progress in Orthopedic Surgery. W. A. Rogers, Boston.—p. 1043.

Mitral Heart Disease.—Reid and Levene state that while early mitral disease is often difficult of recognition clinically, it frequently may be identified by careful roentgen examination. In mitral stenosis an altered relationship of auricular and ventricular areas is a typical and diagnostic roentgenographic sign. Mitral insufficiency can be demonstrated by roentgen examination, and the organic and functional forms differentiated. Roentgen examination affords accurate information concerning the course of mitral disease under treatment.

Northwest Medicine, Seattle

31: 209-262 (May) 1932

Are We Up to Date in Our Treatment of Burns? H. J. Clements, Salem, Ore.—p. 209.
*Friedman Pregnancy Test. A. Mathieu, A. Palmer and A. Holman, Portland, Ore.—p. 215.
Eclampsia: Modern Methods of Treatment. S. S. Jones, Tacoma, Wash.—p. 220.
Incarcerated Gangrenous Ovarian Cyst Complicating Pregnancy and Labor. E. C. Braddock, Lewiston, Idaho.—p. 223.
Pilocarpine as Remedial Agent in Alcoholic Amblyopia. R. W. Perry, Seattle.—p. 224.
*Significance of Uveal Inflammation. F. A. Kiehle, Portland, Ore.—p. 226.
Unilateral Exophthalmos Complicating Nasal Sinus Disease in Infancy. S. Bozarth, Portland, Ore.—p. 230.
Chronic Sinus Infection in Relation to Systemic Disease. N. W. Jones, Portland, Ore.—p. 232.
Present Status of Accessory Sinus Disease. R. A. Fenton, Portland, Ore.—p. 234.
Chronic Antral Infection. L. E. Patrick, Seattle.—p. 238.
Chronic Sinus Diseases: Their Dietetic Treatment. E. V. Ullmann, Portland, Ore.—p. 240.
Cerebral Vascular Syndromes. C. J. Rohwer, Seattle.—p. 245.

Friedman Pregnancy Test.—Mathieu and his associates describe the technic of the Friedman test for pregnancy. Their results with the test in a relatively small series of cases (110) have been highly gratifying. The test is exceedingly valuable in distinguishing early pregnancy and in distinguishing pregnancy in abnormal conditions. The test was positive in a case of tubal pregnancy of four months' duration, in which the diagnostic difficulties were great and in which a living fetus was found at operation. From the technical standpoint the advantages of the Friedman test are many, among which are the relative low cost, the saving of time in making the test, the ease in procuring a suitable animal at all times, and the easily readable signs of a positive reaction.

Uveal Inflammation.—According to Kiehle, the significance of uveal inflammation lies in the possible far reaching and serious consequences of ciliary congestion. Continued or repeated dilatation of the vessels in this highly vascular area results in alterations in the vessel walls and consequent changes in the dialyzed fluids. This alteration in the nutritive elements, supplied the lens and the anterior segment of the eye, in turn necessarily produces changes in their structure and in the manner in which they perform their function. The region of the limbus is so constructed that it may yield readily to intraocular pressure with resultant change in refraction of the eye. When the scleral tissue fails to yield to this pressure, the effect is registered in various symptoms of asthenopia. The causes of ciliary congestion are doubtless exceedingly numerous and as yet no satisfactory classification has been established. It is possible that the causes are so complex as not to lend themselves to any simplified grouping. Serious consequences from inflammation of this region are easily possible, so that painstaking study is demanded. In this study, the slit lamp has been found to be of great assistance.

Ohio State Medical Journal, Columbus

28: 313-400 (May) 1932

Importance of Supplementing Clinical with Laboratory Observations in Pulmonary Tuberculosis. C. A. Doan, B. K. Wiseman, S. T. Mercer and M. D. Miller, Columbus.—p. 333.
Swelling of Eyelids in Patients with Hypothyroidism. H. B. Weiss and C. King, Cincinnati.—p. 341.
Evaluation of Tonsils. J. G. Kramer, Akron.—p. 344.

Oklahoma State Medical Assn. Journal, Muskogee

25: 183-220 (May) 1932

Urinary Tract as a Focus of Infection in Arthritis. B. A. Hayes, Oklahoma City.—p. 183.
Cysts of Upper Abdomen, with Especial Reference to Some Points in Differential Diagnosis. W. P. Neilson, Enid.—p. 185.
Malformations of Uterus and Vagina: Report of Case. R. N. Holcombe, Muskogee.—p. 189.
Hodgkin's Disease: Report of Case. E. H. Coachman, Muskogee.—p. 192.
Glossopharyngeal Neuralgia: Case Report. F. S. Clinton and B. W. Ward, Tulsa.—p. 194.
Relation of Obstetrics and Pediatrics to Dentistry. C. E. White, Muskogee.—p. 197.
Focal Infection from Dental Standpoint. G. L. Dodson, Muskogee.—p. 199.
Some Diseases and Conditions Most Frequently Mistaken for Pulmonary Tuberculosis. R. L. Hickman, Clinton.—p. 201.

Philippine Journal of Science, Manila

48: 1-127 (May) 1932. Partial Index

Studies on Experimental Creeping Eruption in the Philippines. C. M. Africa, Manila.—p. 89.
Study on Philippine Strain of Leptospira Icterohemorrhagiae. H. Hirano, Manila.—p. 103.
Observations on Possible Transmission of Surra by the Land Leech Haemadipsa Zeylanica. M. A. Tubangui, Manila.—p. 115.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

40: 225-278 (May) 1932

Surgical Aspects of Treatment of Mental Defectives, Sexual Perverts and Criminals. H. G. Wetherill, Monterey, Calif.—p. 225.
Mesenteric Vascular Occlusion: Report of an Unusual Case. A. S. Lobingier, Los Angeles.—p. 231.
The Prevention of Phlebitis. E. W. Rockey, Portland, Ore.—p. 236.
Teratoma Testis Diagnosed from Early Remote Metastasis: Case. T. E. Gibson and H. R. Arnold, San Francisco.—p. 241.
Indirect Inguinal Hernia in Children. H. E. Coe, Seattle.—p. 248.
Ectopic Gestation: Clinical Study with Notes on Treatment and Value of Autotransfusions. G. K. Rhodes, San Francisco, and D. C. Collins, Rochester, Minn.—p. 252.
Dissemination of Cancer from Breast. D. V. Trueblood, Seattle.—p. 258.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 827-872 (May 7) 1932

*Surgical Treatment of Intrathoracic New Growths. A. T. Edwards.—p. 827.
Porencephalic Imbecility: Case. R. J. A. Berry and R. M. Bates.—p. 830.
*Spontaneous Hypoglycemia. A. Ramsbottom and C. G. Eastwood.—p. 833.
Compression Fracture with Comminution of Body of Third Lumbar Vertebra and Neural Arch of Fourth Vertebra with Paraplegia. H. D. Isaacs.—p. 835.
Chronic Gastric Ulcer in Boy Aged 13. M. Oldfield.—p. 836.
*Edema in the New-Born. J. Gibbens.—p. 837.
*Local Anesthesia for Tonsillectomy. J. W. Costello.—p. 839.

Intrathoracic Growths.—According to Edwards, modern methods of investigation enable a much earlier and more correct diagnosis of intrathoracic growths to be made and often assist one to determine the exact nature of these tumors. The methods entail: (1) careful roentgen examination of the chest from the anteroposterior, lateral and oblique aspects; (2) further roentgen examination after the induction of artificial pneumothorax, or gas replacement of effusions; (3) the delineation, when indicated, of the bronchial tree by iodized oil; (4) the introduction of the thoracoscope into a pneumothorax cavity, when this is possible, for visual examination of the superficial surface of the lung and pleura, and determination of the superficial characters of the tumor (projection into the pleura), and (5) bronchoscopic examination in which iodized oil gives evidence of bronchial obstruction, or in cases in which hemoptysis is a prominent feature, and in which the sputum is negative for tubercle bacilli after several examinations. In spite of these methods exact diagnosis will be impossible in certain cases, and it is in these that exploratory thoracotomy should be advised with certain precautions. The operation is of no greater severity than exploratory laparotomy, and, in fact, the convalescence is often shorter. By this means, tumors that were apparently malignant have been proved to be benign and have been successfully removed, while others, definitely malignant, have been found operable. The hope of satisfactory treatment of all types of intrathoracic new growths, benign or malignant, depends on early diagnosis.

Spontaneous Hypoglycemia.—Ramsbottom and Eastwood call attention to the fact that cases of hypoglycemia associated with widely different pathologic states are recorded. The majority appear to be connected with progressive lesions of the pancreas. In a case observed by them, however, so far as could be seen from a naked-eye examination of the pancreas, no demonstrable lesion was present. The only pathologic conditions discovered were gallstones and a greatly distended appendix; and the prominent physical signs—Argyll Robertson pupils, extensor plantar response, and irregular pupils—suggested a lesion of the central nervous system. Therefore it occurred to the authors that the dysfunction of the pancreas, leading to hyperinsulinism, may be a reflex phenomenon secondary to an infected gallbladder; and, in view of the fact that temporary insulinism produces absence of reflexes with extensor plantar responses, persistent insulinism may produce this condition permanently (also dysarthria and Argyll Robertson pupils) by acting on the bulb and midbrain.

Edema in the New-Born.—Gibbens states that edema is a symptom of fairly common occurrence in the new-born, especially in premature and debilitated infants; it is often directly due to the effects of cold in the capillaries and to circulatory weakness. If the condition is recognized early and treated promptly, the outlook is quite favorable; while in cases that are febrile it is commonly an early manifestation of sepsis. Nephritis is only rarely a cause of edema in the new-born.

Local Anesthesia for Tonsillectomy.—In the administration of local anesthesia for tonsillectomy, Costello gives preliminary morphine only to an unduly fearful minority; the patients' cooperation is gained by a short explanation of what is to be expected of them. The fauces are liberally sprayed with 10 per cent solution of cocaine, after the patient has been cautioned against swallowing any of it. In five minutes the injection of 0.75 per cent procaine hydrochloride and epinephrine may be commenced. A light syringe and long needle are necessary. Injections are made into the upper and lower poles and just outside the margin of the anterior and posterior pillars, about the center. Enough should be injected to encircle the tonsil with a band of anemic tissue and to saturate its bed, from which it will project rather than usual if not too adherent or fibrosed. The faucial tissues should not be blown into edematous folds with the solution. By the time the second injection is finished, the first tonsil will be ready for dissection. This is done with the finger or dissector and scissors but requires considerably more gentleness than is at times used in the dissection of tonsils under general anesthesia. In most cases the work is done in a field that is nearly dry, and one can proceed deliberately. The smallest adhesions should be snipped instead of torn. It is at this stage that the cooperation of the patient becomes particularly valuable, as by keeping his mouth well open and pharynx relaxed he will give good exposure of the parts with the occasional help of a tongue depressor used only lightly. Any form of gag should be avoided, as being too uncomfortable for the conscious patient. At any stage the partially dissected tonsil may be held with a swab while the patient is allowed to relax his jaw and rest; indeed, these spells may be encouraged if the tonsil is looked on as a piece of raw tissue and an efficient hemostat. After the removal of the second tonsil is completed, swabs held in the tonsillar fossae for a few minutes suffice to reduce the hemorrhage to a point at which the saliva is just colored, and the patient is able to walk to the ward or be driven to his home.

Glasgow Medical Journal

36: 225-280 (May) 1932

Plastic Replacement of Upper Lip in Case of Epitheliomatous Ulcer Resulting from Roentgen-Ray Treatment of Sycosis Barbae. A. J. Hutton.—p. 225.
Disseminated Encephalomyelitis: Preliminary Communication. Elizabeth Milligan Pollock.—p. 231.
Sir Walter Scott and Medicine. A. W. Cassie.—p. 238.

Journal of Hygiene, London

32: 143-300 (April) 1932

Serologic Diagnosis of Typhoid and Paratyphoid Fevers. J. Smith.—p. 143.
*Effects of Excessive Intake of Magnesium by Rat, Especially Concerning Factors Relating to Production of Renal Calculi. Elsie Watchorn.—p. 156.
Spermicidal Powers of Chemical Contraceptives: IV. More Pure Substances. J. R. Baker.—p. 171.
Effect of Parboiling and Milling on Antineuritic Vitamin (B) and Phosphate Content of Rice. W. R. Aykroyd.—p. 184.
*Latent Infection with C. Diphtheriae in Association with Bacterial Experience and Schick Immunity. S. F. Dudley.—p. 193.
*Growth Under Vita Glass. I. N. Sutherland.—p. 211.
Incidence of Encephalitis Lethargica and Acute Anterior Poliomyelitis in Lancashire and Elsewhere. P. Stocks.—p. 219.
Study of Bacillus Mucosus-Capsulatus Group. Hilda R. Hay.—p. 240.
Prophylactic Vaccination in Epidemic Meningococcal Meningitis. D. Riding and N. L. Corkill.—p. 258.
Conditions of Temperature and Humidity of Air Between Skin and Shirt of Man. K. Mellanby.—p. 268.
Streptococcus Mucosus Lyticus. L. S. Dudgeon and D. C. L. Derry.—p. 275.
Pleomorphism of Proteus Vulgaris Determined by Sodium Chloride Content of Culture Medium and Simulating Stages in Life Cycle. E. M. Dunlop and H. E. Maitland.—p. 283.
Rôle of Tobacco-Smoking in Production of Cancer. E. A. Cooper, H. G. Bott, R. S. Tipson, F. W. M. Lamb and E. Sanders.—p. 293.

Magnesium and Renal Calculi in Rats.—Watchorn describes experiments in which she noted that rats taken from mixed stock diet and fed synthetic diet containing an excess of magnesium carbonate developed urinary calculi in a large number of cases. The incidence of calculi was much higher in the females. Addition of excess of calcium carbonate to the diet prevented the formation of calculi. Rats previously fed for a short time on the synthetic diet and normal salt mixture did not develop calculi but suffered from severe catharsis. Rats on mixed stock diet had a more acid cecum and colon than those on synthetic diet. No significant alterations were found in the calcium, magnesium or inorganic phosphorus of the blood on any of the diets. Extra magnesium or calcium or sodium carbonate lowered the urinary phosphate excretion. Extra magnesium or calcium had little effect on the urinary excretion of the other but tended in each case to lower the output.

Diphtheria in Association with Bacterial Experience and Schick Immunity.—Dudley reports that in a semiclosed institution, Greenwich Hospital School, there was no constant relation between the prevalence of cases and carriers of virulent, or avirulent, diphtheria bacilli. Carrier rates showed a seasonal periodicity with a maximum in the autumn and a minimum in the winter school term. High rates for carriers of virulent bacilli were found in the absence of clinical diphtheria and presence of numerous Schick susceptibles. As much as 40 per cent of a randon sample of healthy boys, none of whom contracted diphtheria, were discovered to harbor diphtheria bacilli within one year, during which the average carrier rate in the sample was 6.8 per cent. The carrier rate for avirulent diphtheria bacilli, among boys recently infected with virulent bacilli, was three times the expected rate. The carrier rate for virulent diphtheria bacilli, among boys recently infected with avirulent bacilli, was no higher than the expected rate. The frequency of avirulent diphtheria bacilli infections was twice as great among Schick susceptibles as among Schick immunes. Carriers of virulent bacilli (with five exceptions) were always found to have Schick-negative reactions, in spite of their being more frequent among the junior members of the institution. Carriers of avirulent diphtheria bacilli were as common among the senior as among the junior Schick-immune members of the school. Carriers of avirulent bacilli were less frequently found in those Schick-susceptible members of the community who were most quickly immunized by artificial diphtheria antigens. The hypothesis that, when a Schick susceptible is infected with virulent diphtheria bacilli, the latter often acquire avirulence, could satisfactorily explain many anomalies in the distribution of latent infection with diphtheria bacilli and Schick immunity.

Growth Under Ultraviolet Transmitting Glass.—According to Sutherland, white rats reared from the age of 30 to 275 days under ultraviolet transmitting glass, and properly fed, do not grow at a different rate from those reared under ordinary glass. The offspring of these rats, kept in the same environment, grow at the normal rate when compared with controls born and reared under ordinary window glass.

Journal of Tropical Medicine and Hygiene, London

35: 113-128 (April 15) 1932

Leprosy in Children: Study of One Hundred Cases in Central Leper Hospital, Makogai, Fiji. C. J. Austin.—p. 113.

Effect of Ameba (Hartmannella) Castellanii on Bacterial Cultures. C. E. van Rooyen.—p. 118.

Susceptibility of Some Birds and Wild Animals to Infection with Trypanosoma Rhodesiense. J. F. Corson.—p. 123.

Lancet, London

1: 971-1026 (May 7) 1932

*Sterility. V. Bonney.—p. 971.

*Stones in Common Bile Duct. R. P. Rowlands.—p. 975.

*Increased Carbohydrate in Treatment of Diabetes Mellitus. S. C. Dyke.—p. 978.

*Tubercle Bacilli in Blood Stream in Human and Animal Tuberculosis. C. Weatherall.—p. 980.

*Cultivation of Tubercle Bacillus and Occurrence of Tuberculous Bacillemia. J. N. Cumings.—p. 983.

Sterility.—Bonney states that in all cases of sterility with no obvious cause apparent the husband should be examined as regards both his physical condition and the state of his semen. The only reliable way to examine the semen is to do it microscopically in his own house almost immediately after it has been passed. A strictly scientific investigator would then proceed to mix the semen with some of the upper vaginal discharge collected in a pipet and watch the behavior of the sperm under these conditions. This, however, is not usually done. The woman must be investigated like any other gynecologic case by question and physical examination and, this completed, the tubal insufflation test should be carried out. This should always be performed under an anesthetic, and the question therefore arises whether or not the surgeon should advise his patient to let him proceed at once to abdominal section in the event of the test indicating that both tubes are closed. It is important in this connection to bear in mind that failure to get air to pass along the tubes, though usually due to fixed conditions, may be dependent on temporary causes, such as thickening of the cornual endometrium, or even, it is said, muscular spasm at the tubo-uterine junction. If either of the two latter conditions obtains, it will be found on opening the abdomen that air can be forced down the tube though it cannot be forced upward. Blockage of this character is not common, but nevertheless in a case in which tubal insufflation indicates that both tubes are blocked it is often advisable to repeat the test in a month and to proceed to open the abdomen only if, at the second time of trying, air still will not pass. Many women, though they are anxious to have a child, do not desire it sufficiently to make them willing to undergo an abdominal operation for the sake of the possibility of having one. On the other hand, there are cases in which the presence of marked retroflexion, or uterine fibroids, or a thickening in the region of the tubes, or a past history strongly pointing to salpingitis makes it practically certain that the failure of air to pass is due to a fixed condition, and in such cases repetition of the test is unnecessary before opening the abdomen.

Stones in Common Bile Duct.—Rowlands believes that, when the symptoms and signs point strongly to the presence of calculous obstruction of the common bile duct, an operation is indicated whenever the condition of the patient allows it, for there is little hope of cure by medical treatment or by waiting, although the stone sometimes at last ulcerates through and is discharged into the duodenum. But it is usually wise to defer operation until the quiet period; i. e., until jaundice and especially fever have abated. Operations on the common duct are much safer when undertaken in the quiet period, but when colic and jaundice continue indefinitely without remission it is necessary to operate without waiting too long for a quiet period, before the patient has wasted unduly and has become unusually liable to bleed or to become comatose after operation. Occasionally a stone firmly impacted in the common bile duct causes sloughing and perforation of the duct with local or even diffuse peritonitis. When the cause of chronic jaundice is uncertain it is generally wise to explore, and the author has often been rewarded in such cases by finding one or more stones in the common bile duct. Moreover, if not stone, but some irremovable cause of obstruction is found, a cholecystogastrostomy can be made to overcome the jaundice and the intolerable itching and anorexia which make the patient so unhappy and always shorten his life. It is rarely wise to allow many repetitions of biliary colic with jaundice, although it may be reasonable not to operate after the first attack in the hope that the only stone has passed and that no more may develop. After every fresh attack spontaneous cure becomes more and more improbable, because common duct stones inevitably and often rapidly increase in size and become naturally more difficult to pass through the duodenal orifice of the duct, which is only one-twelfth inch (0.21 cm.) in diameter. Moreover, more or less septic infection of the ducts and liver frequently follows and leads to serious loss of liver function, with marked increase of the mortality after delayed operation.

Increased Carbohydrate in Diabetes Mellitus.—According to Dyke, the higher carbohydrate diet in diabetes mellitus possesses many advantages. It is more palatable and cheaper than the old high fat diet and approaches more closely to the diet in general use in England. It is a comparatively simple matter to arrange for the diabetic subject a diet requiring no special cooking in the home and which he can select from any ordinary meal table when away. The use of special diabetic foods is not only unnecessary but actually objectionable. Apart from consideration of cost, palatability and convenience, the higher carbohydrate diet is further advantageous from the standpoint of the general health. The older type of diabetic diet largely depended for its caloric value on the high fat content; a high fat intake in the diet tends to produce ketosis and also actually has some antagonistic effect on insulin. Further, a high fat intake tends to raise the level of the cholesterol in the blood, and there is ample though possibly not conclusive evidence that a high blood cholesterol is one at any rate of the determining factors in bringing about atheromatous changes in the blood vessels. Arteriosclerosis is almost invariable among diabetic patients of any standing, even those successfully treated on the older high fat diets, and the complications of arteriosclerosis are among the commonest of the causes of death and disablement of diabetic subjects, treated and untreated

alike. Evidence is already collecting that increase of the carbohydrate content of the diet is effective in clearing up the arteriosclerosis and reducing the blood pressure.

Tubercle Bacilli in Blood Stream.—On the principle of Löwenstein's technic, Weatherall made cultures from the heart blood of forty tuberculous guinea-pigs. Acid-fast bacilli failed to grow. From thirty sanatorium cases of pulmonary tuberculosis, blood clot was digested with pepsin by the method of Jousset; after sterilization with acid, cultures of the residue on egg medium failed to grow tubercle bacilli. From small quantities (0.5 cc.) of heart blood of sixty-three tuberculous guinea-pigs cultured in veal broth by the method of Dreyer and Vollum, one primary positive culture was obtained, and in two cases subcultures on egg medium were successful. Blood from fifteen tuberculous patients was injected into guinea-pigs. One animal, inoculated from a case of advanced pulmonary tuberculosis, developed lymph node and generalized tuberculosis. The other fourteen proved negative.

Cultivation of Tubercle Bacillus.—Cumings describes attempts to cultivate the tubercle bacillus from pathologic materials on Corper's potato medium and Hohn's egg medium. The egg medium yielded more than twice as many positive cultures as the potato medium, and a positive culture was obtained in only about 50 per cent of the cases in which the tubercle bacillus was demonstrated by direct examination or guinea-pig inoculation. Blood culture was performed in cases of tuberculosis, multiple sclerosis and lymphadenoma, and in no case was a positive result obtained.

Medical Journal of Australia, Sydney

1: 521-564 (April 16) 1932

Hodgkin's Disease: A Treatise. L. Utz and Leila Keatinge.—p. 521.
Gastro-Enteritis or Epidemic Diarrhea: Review of an Epidemic. Margaret Harper.—p. 538.
Account of a Medical Survey of Norfolk Island, Directed Primarily to the Question of Hookworm Disease, but Also Including Series of Pirquet Tests. A. H. Baldwin.—p. 543.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

48: 575-620 (May 9) 1932

Origin of Hematemeses. René-A. Gutmann and M.-J. Demole.—p. 576.
Gastric Intolerance of Hemorrhagic Form: So-Called Essential Hemorrhages. M. A. Tzanck.—p. 585.
*Sclerosis of Varices and Hemorrhoids by Glycerin with Addition of Chrome Alum. H. Jausion, G. Medioni, A. Pecker and W. Gozlan.—p. 587.
Evolution of Syndrome of Exophthalmic Goiter Toward Myxedema Following Treatment by Diiodotyrosine. C. I. Parhon and L. Ballif.—p. 601.
Rechloruration in Course of Certain Digestive Disturbances. L. Binet and C. Zamfir.—p. 605.
*Craniohypophyseal Xanthomatosis (Schüller-Christian's Disease). E. Lesné, J.-A. Lièvre and Y. Boquien.—p. 610.
Therapeutic Gangrene of Cancer of Breast. M. Renaud.—p. 616.
Peripheral Venous Pressure. M. Villaret.—p. 617.
Etiology and Therapy of Enuresis. J. Paraf.—p. 619.

Sclerosis of Varices and Hemorrhoids by Glycerin and Chrome Alum.—In the opinion of Jausion and his associates, glycerin with chrome alum added to it deserves a leading place among sclerogenous agents. They find that it has the undeniable advantages over many other products of (1) rapidity of action, (2) lack of causticity and (3) innocuity. The technic of its therapeutic use is simple. The formula for the solution used by the authors is 126 Gm. of glycerin, 1.5 Gm. of chrome alum and 200 Gm. of distilled water. The chrome alum prevents possible slight hematurias due to the glycerin and at the same time augments the sclerosing power of the glycerin. In varicose vein therapy from 5 to 10 cc. (rarely 15 or 20) is injected in a single dose at a single site. The injection is made into the highest of the varicose dilatations after application of a tourniquet as near as possible to the base of the limb. The tourniquet, applied while the patient is standing, prevents sclerosis at distant points in the circulation. Injections are made at weekly intervals. Total obliteration is imperative. This is usually attained by the glycerin and chrome alum mixture in from two to four injections, rarely more. Of sixty-five patients treated with this mixture, only two had to be reinjected a single time because of imperfect obliteration. Several cases are reported. For the treatment of hemorrhoids the same formula is used and the same amount is injected in one dose. Only external hemorrhoids were treated by the authors. The technic is described. One injection usually results in cure. If a second injection is necessary, an interval of one month is advised. Proctoscopy practiced before and after treatment in some of the cases indicates that cure of the external hemorrhoids suffices to regulate the venous circulation of the anal canal; the endovascular and perivascular sclerosis gradually reaches the higher ectasias. Of thirty-four patients in whom hemorrhoids were sclerosed by glycerin mixed with chrome alum, only one required a reinjection. No grave complications, such as gangrene of a large strangulated hemorrhoid, were encountered, and pylephlebitis, the authors think, is less to be feared than embolism in the treatment of ulcerated varices.

Craniohypophyseal Xanthomatosis (Schüller-Christian's Disease).—Lesné and his associates report and discuss a case of craniohypophyseal xanthomatosis, or Schüller-Christian's disease. A girl of 3 presented the tetrad of symptoms characterizing the disease: diabetes insipidus, cranial lacunae and lesions, exophthalmia and disturbance in development. The cranial lacunae, at least three in number, were revealed by roentgenograms; the largest one in the left occipital region could be felt on palpation. The authors say that virtually all histologic study has shown that, in these lesions, osseous tissue is replaced by xanthomatous cells; sometimes fibrosis is seen, seeming to replace the xanthomatous cells. Xanthomatous cells are large uninucleated or multinucleated cells with small peripheral nuclei, often pyknotic. The overabundant cytoplasm presents a vacuolar, foamy appearance, due to inclusion of cholesterol esters and giving double refraction with Nicol prisms; neutral fats also are present but it is the lipoid inclusion that is characteristic of xanthomatosis. The principal therapeutic measures are listed by the author thus: posterior hypophyseal opotherapy, roentgen therapy of the cranial lacunae and the infundibulotuberian region, insulin therapy and thyroid opotherapy.

Presse Médicale, Paris

40: 813-828 (May 21) 1932

*Sign of Plantar Pain Anterior to Heel for Early Diagnosis of Postoperative Phlebitis. Ducuing.—p. 813.
Use of Methylated Antigen in Dispensary Practice. L. Sayé and T. Seix.—p. 814.
Thermic Elevation Provoked by Diathermy in Treatment of Acute Asthma. S. M. Feinberg and S. L. Osborne.—p. 816.
Cholecystography and Contractions of Gallbladder. H. Godard and A. Koliopoulos.—p. 818.

Plantar Pain Anterior to Heel as Early Diagnostic Sign of Phlebitis.—Plantar pain as an early symptom of postoperative phlebitis was first described by Denecke in 1928. Ducuing discusses this sign, calling it plantar pain anterior to the heel in order to designate more exactly the location of the pain. The sign consists in the manifestation of pain in the posterior part of the plantar arch, close to the heel and on the median line, a few days after operation or sometimes when the patient arises for the first time. The pain can be provoked by the surgeon and is sometimes so acute that patients present a veritable hyperesthesia of the skin in the region indicated. In certain cases the spontaneous pain follows the interior of the foot in front of the calcaneum under the medial malleolus and in the anterior malleolar groove. It may be accompanied by a pain provoked in the calf by dorsal flexion of the foot which compresses the posterior tibial veins. This pain, according to Denecke, is due to the pressure which the thrombosed veins exert on the nerve branches that are in close contact with them. These veins are all the more compressed because the spaces in which they are contained are not extendable and cellular tissue, which might reduce the pressure, is normally absent. Necropsies done by Payr show the frequency of phlebitis of the superficial and deep plantar veins in all persons operated on and the constancy of these lesions in individuals with phlebitis of the extremities. The authors thinks that venous spasms also play an important part in all phlebitic pains, especially in precocious ones. In discussing the diagnostic value of this sign, he says that it is indisputable when it exists, but he considers it inconstant and not always very precocious. In his opinion, lesions of the pelvic veins play a more important part in determination of phlebitis of the lower extremities than lesions of the plantar veins. In cases in which phlebitis first attacks the leg or the plantar veins, the plantar pain may manifest itself as an early sign of postoperative phlebitis, but more frequently the early signs of this compli-

cation are found in the pelvis. Despite these criticisms the author thinks that this sign should be known and its value not neglected, especially in view of the difficulty of foreseeing a postoperative phlebitis and the importance of early immobilization in preventing aggravation of a phlebitis or appearance of an embolism.

Giornale di Batteriologia e Immunologia, Turin

8: 225-336 (March) 1932

Gastroduodenal Ulcer Due to Insufficient Alimentation. V. Gronchi.—p. 225.
Methods of Differentiation in Bacteria of the Brucella Group. E. Pugnani—p. 231.
*New Method of Rapid Staining of Tubercle Bacilli in Sputum. P. Doglio.—p. 243.
Bacteremia in Diphtheria. P. Roberto.—p. 247.
Mechanism of Habituation of Bacteria to Toxins. D. Grandi.—p. 254.
Bacteriologic Research in Measles. Maria Teresa Casassa.—p. 274.
Behavior of Phagocytes in Experimental Acidosis. L. La Grutta.—p. 295.
Microbic Dissociations. A. Azzi.—p. 303.

Rapid Staining of Tubercle Bacilli in Sputum.—Doglio spreads the material on a slide and applies Ziehl's carbolfuchsin to it, heats the slide until it steams, and afterward washes it thoroughly in running water. Then he places it for from forty to fifty seconds in a solution of his own: brilliant yellow 0.15 Gm., concentrated sulphuric acid 10 cc., alcohol 20 cc., and distilled water 85 cc. It is again thoroughly washed and dried with blotting paper. The bacilli are colored red on a lemon yellow background. Three hundred tests revealed that: 1. The method is more rapid than that of Ziehl, taking exactly half the time. 2. The tubercle bacilli are shown clearer and more numerous, thereby facilitating research. 3. The method is just as reliable as the Ziehl-Neelsen test; there were no negative results when the Ziehl-Neelsen test was positive.

Policlinico, Rome

39: 285-356 (May 15) 1932. Surgical Section

*Clinical and Roentgenologic Considerations of Function of Oddi's Sphincter and Cholecystographic Methods of Graham and Antonucci in Patient with Biliary Fistula. G. Barbéra and A. Capua.—p. 285.
Clinical Value of Morphologic and Numerical Variations of Leukocytes in Surgical Diseases. S. Boamcardi.—p. 297.
Pathogenesis of Vesico-Ureteral Reflux. S. Scandurra.—p. 313.
Perforated Gastroduodenal Ulcers and Their Treatment. G. Scollo.—p. 346.

Function of Oddi's Sphincter.—Barbéra and Capua injected an opaque substance into the intrahepatic and extrahepatic biliary tract of a patient through an hepatic fistula due to suppurating echinococcal cyst of the liver. The substance was thought to be in the gallbladder after an hour because of its disappearance from the biliary tract, the enlargement of the cholecystic shadow and the absence of opaque substance in the digestive tract. Roentgen examination revealed the perfect tonicity of Oddi's sphincter, which, having let pass a small amount of opaque substance, contracted and held the rest of the injection for at least two hours more. The changes in the duodenal tonus due to peristalsis had no influence on the liquid collected in the gallbladder. The successive accumulation of the opaque substance in the cyst, the intrahepatic bile ducts, the hepatic and cystic ducts and the gallbladder was easily explained because it was the way physiologically followed by the bile in order to come to the cholecystic reservoir. The reflux of the substance from the choledochus to the gallbladder was explained either by such action of the gallbladder through hydrodynamic causes or by antiperistaltic movements of the wall of the choledochus. The gallbladder was credited with great power of adaptability to large quantities of liquids arriving there abruptly. The authors applied the tests of Graham and Antonucci to the same individual. They compared the behavior of the bile eliminated in the two tests and found that while in the test of Graham the bile gradually carries the iodine to the gallbladder, which concentrates it, in the test of Antonucci there is a rapid arrival of much bile rich in iodine and the concentration on the part of the gallbladder is less important.

39: 797-836 (May 23) 1932. Practical Section

Orthostatic Arterial Hypotension. M. Tripodi.—p. 797.
Pathogenesis and Treatment of Esophageal Diverticulitis. M. Margottini.—p. 801.
*Case of Acute Erythremic Myelosis. A. Brugi.—p. 807.

Case of Acute Erythremic Myelosis.—Brugi reviews the literature of myelosis and then distinguishes between three types of partial hyperplastic myelosis: 1. Acute erythremic myelosis, characterized either by basophilic orthochromatic and polychromatophilic erythroblasts or the same types of megaloblasts. 2. Acute leukemic myelosis, which after a brief aleukemic period is characterized by a notable increase of the leukocytes of the granulocytic immature type, and by an almost normal or greatly decreased number of red cells. From the histologic point of view there is hyperplasia of the leukoblastic medullary tissue and the myeloid infiltrations are characterized by the presence of immature cells in the spleen, liver and lymph nodes. 3. Acute aleukemic myelosis, similar to the leukemic form except for the aleukemic hematology. The chronic form is characterized by a lesion of the leukoblastic myeloid tissue. The author describes the symptomatology of acute megaloblastic and pernicious erythremic myelosis as: (*a*) acute beginning and course of the disease, (*b*) severe anemia, (*c*) general malaise, (*d*) hemorrhages of the skin, mucous membrane and internal organs, (*e*) pseudoscorbutic lesions of the gums and palate, (*f*) necrotic angina, (*g*) remittent fever and (*h*) moderate splenomegaly and hepatomegaly. The hematologic characteristics were promegaloblasts, basophilic, polychromatic and orthochromatic megaloblasts, and erythroblasts.

Prensa Médica Argentina, Buenos Aires

18: 1575-1622 (April 30) 1932

*Occlusion of Appendix. J. Llambías and T. Malamud.—p. 1575.
Delmas Method in Labor. J. C. Lascano.—p. 1586.
*Mammary Vicarious Menstruation. E. B. Ries.—p. 1602.
Postoperative Treatment in Meniscectomy for Restoration of Function of Knee Joint. J. L. Giovannini Cattáneo.—p. 1607.
Relation of Cardiovascular System to Endocrinology. P. M. Barlaro.—p. 1611.

Occlusion of Appendix.—Llambías and Malamud made a study of ninety-five appendixes (forty-five removed at operation and fifty removed at necropsy). Partial or complete occlusion was found in five appendixes (11 per cent) of the first series and in twelve appendixes (24 per cent) of the second series. In both series the predominant neoformation was a fibroneuroma. The persons from whose cadavers the appendixes were removed (with the exception of only one case) did not present at any time clinical symptoms which might have indicated, in some form, any pathologic condition of the organ. Occlusion of the appendix in those cases had not been suspected during the patient's life and it was an unexpected observation at necropsy. Occlusion of the appendix has no protopathic value in the determination of the so-called chronic appendicitis. The routine anatomicoclinical studies of parallel series of appendixes removed at operation and at necropsy are important to make an estimation of the clinical value of occlusion of the appendix, by means of which a better understanding of some anatomicoclinical pictures observed in the pathologic conditions of the appendix may be obtained.

Mammary Vicarious Menstruation.—Ries reports a case of vicarious menstruation from the breast in a virgin, aged 32, who up to the appearance of the mammary hemorrhages had not had symptoms indicating genital disturbances. While the patient was in apparently normal condition, menstruation disappeared and monthly hemorrhages from the breast followed. Hemorrhages from the breast may be observed in hysterical women, in women with a predisposition to hemophilia, during the course of hemorrhagic purpura, during lactation, as supplemental menstruation (cases showing a diminished menstruation), as vicarious menstruation (suppression of menstruation, as the author's case), or they may be caused by trauma of the breast or by fissures or sores of the nipples. After all the conditions mentioned (especially trauma) have been ruled out, hemorrhage from the breast may have a diagnostic value in pointing out the presence of epithelioma of the breast in an early stage of development. The patient should be watched carefully for a possible future development of the tumor, even if during examination no tumor was detected on palpation. After all the conditions mentioned (hysteria, hemophilia, hemorrhagic purpura, lactation, trauma, fissures or sores of the breast) have been ruled out, but provided the patient has a diminished or suppressed menstruation, the presence of either

supplemental or vicarious menstruation is obvious. The prognosis for the patients with vicarious menstruation is favorable. Spontaneous recovery takes place if the patient is given the proper treatment, which aims to restore the genital activity and normal menstruation. If the patient is at the menopausal age, recovery will take place as soon as the symptomatic hypertension is controlled. Opotherapy and sportive exercises give satisfactory results. In cases in which opotherapy does not give satisfactory results it may be associated with the administration of thermal or electrical therapy (hot vaginal douches or intra-uterine electrical applications) which aim to regulate the hyperemia of the uterus. In grave cases of vicarious hemorrhages, scarification of the cervix and the administration of strong saline cathartics are advisable. This treatment aims to produce a derivation of the blood toward the genital organs. Gynecologic operations are indicated when the disturbances of menstruation are associated with malformations of the vagina or of the uterus. Surgical dilation of the cervix, either with or without intubation (whichever is necessary) is indicated in cases in which the menstrual disturbances are associated with cervical stenosis. As the last resource in cases of either cervical stenosis or genital malformations, castration is indicated. The author's patient received a combined treatment of ovarian hormone and aloe preparations and also a preparation of the anterior lobe of the hypophysis, and she was instructed to perform sportive exercises. Menstruation in this case returned to normality and the hemorrhage from the breast disappeared.

Semana Médica, Buenos Aires

39: 1281-1360 (April 28) 1932. Partial Index

Ocular Symptoms in Diagnosis of Intracranial Tumors. R. Argañaraz.—p. 1281.
Toxemia in Pregnancy: Evacuation of Uterus. T. A. Chamorro.—p. 1288.
Diffuse Epithelioma of Cranial Vault: Case. G. Zorraquín.—p. 1293.
Tumors of Orbit: Clinical and Anatomic Study. M. Balado and M. Ibáñez Puiggari.—p. 1302.
Undulant Fever in Buenos Aires. A. A. Carabelli, J. Tenconi and R. Palazzo.—p. 1307.
Comparative Value of Classic Cesarean Section and Lower Uterine Segment Cesarean Section in Placenta Praevia. R. Echevarría.—p. 1313.
*Pneumococcic Peritonitis in Childhood. B. Paz and I. Díaz Bobillo.—p. 1316.
The So-Called Rare Treatment in Osteo-Articular Purulent Infections. T. Zwanck.—p. 1325.

Pneumococcic Peritonitis in Childhood.—Paz and Díaz Bobillo describe their experience with forty-five cases of pneumococcic peritonitis. They conclude that pneumococcic peritonitis is a disease which usually affects children between 2 and 10 years of age, being more frequent in girls than in boys. The pathogenic agent is Fränkel's pneumococcus. The routes of spread of the infection are, probably, the blood and the genital tract. Contrary to the current conception, diarrhea is not a constant symptom; constipation is also frequently observed. The patient with pneumococcic peritonitis presents a grave condition of infection, which is not in relation to the local picture. Early diagnosis is of great importance. Frequently the disease is erroneously diagnosed as peritonitis of an appendicular origin. Pneumococcic peritonitis at the onset of the disease is a generalized peritonitis. At a further stage it is localized, while the contrary is true of peritonitis of an appendicular origin. The prognosis depends on the opportuneness with which the operation is performed. The disease follows a more benign course if the operation is performed when the peritoneal exudates and fluids have already formed a collection; that is, between twenty and twenty-five days (and only in exceptional cases between twenty and forty-five days) after the onset of the disease. As a rule, both infectious and general symptoms have improved after that period, under the effect of the medical treatment. Pneumococcic peritonitis follows a grave evolution when the patients are operated on early during the disease. However, when the operation is deferred too long there is a danger of reaggravation of the symptoms of infection and of a possible rupture of the peritoneal collection. When a girl between 2 and 10 years of age presents an acute peritoneal condition associated with a grave infection, one should give great consideration in the diagnosis to the possible presence of a pneumococcic peritonitis.

Archiv für Verdauungs-Krankheiten, Berlin

51: 281-418 (May) 1932

*Problems in Scurvy. H. Öhnell.—p. 281.
Conservative Treatment of Acute Necrosis of Pancreas. L. Strauss.—p. 321.
*Rational Method and Dosage in Galvanization of Stomach. A. Kirstner.—p. 327.
Raw Diet. O. Thill.—p. 334.
Allergic Manifestations in Disorders of Biliary Tract. E. Fodor and S. Kúnos.—p. 347.
Gastritis Problem in Light of Modern Functional Tests of Stomach. W. Schemensky and J. Geling.—p. 373.
Diathermy Treatment of Habitual Constipation. H. S. Lurje.—p. 377.
Diet in Prolonged Dyspnea. G. Mészáros.—p. 380.

Problems in Scurvy.—Öhnell shows that the development of scurvy during special diets that are instituted on account of disorders of the digestive organs is not at all a rarity. His material includes sixty-two cases in which scurvy was manifest, twenty-six in which it was latent, and forty-nine questionable cases. In a large number of cases, the development of scurvy could be traced to a strongly scurvygenic diet. In other instances this was less evident. The author thinks that in some cases there may exist a greater predisposition for scurvy, which may be due to the intestinal disease and perhaps also to deficient acid formation in the stomach; however, he does not consider this assumption definitely proved. As methods to detect latent scurvy, he mentions examinations of the teeth and tests of the capillary resistance. Based on a material of thirteen cases, he cites factors in support of his assumption that scurvy may cause Ménière's disease, and he also considers it possible that some cases of otosclerosis are of this origin. Further, he points out that scurvy may eventually be the cause of certain gynecologic disorders, such as amenorrhea and sterility. Quite frequently scurvy is accompanied by symptoms of neurosis and in some instances depressive psychoses exist. For the treatment and prophylaxis of scurvy, the significance of a sufficient supply of vitamin C is emphasized.

Galvanization of Stomach.—Kirstner stresses that galvanization of the stomach, in order to be helpful, requires careful dosage and a suitable method, for incorrect application defeats its efficacy. The current strength should not be less than 50 milliamperes, and after several treatments it may be increased to 100 milliamperes. Each treatment should last about thirty minutes. The electrode that is applied to the region of the stomach should be 200 square centimeters in size. In cases of deficient and normal secretion, galvanization of the stomach produces an increase; in cases with increased secretion, galvanization produces fluctuations to both sides. The evacuation of the stomach is accelerated by galvanization, and spastic conditions of the pylorus are counteracted.

Deutsche medizinische Wochenschrift, Leipzig

58: 763-802 (May 13) 1932

Therapy of Pulmonary Tuberculosis in Last Fifty Years. R. Staehelin.—p. 763.
*Modification of Tuberculosis by Other Diseases. A. Bacmeister.—p. 766.
Roentgen Examinations to Detect Tuberculosis in German Army. Franz and Müller.—p. 769.
*So-Called Old Age Lung. F. Leeser.—p. 771.
Statistics on Surgical Treatment of Pulmonary Tuberculosis. H. Schulte-Tigges.—p. 772.
Significance of Bacteriologic Investigation for Development of Dermatology. W. Scholtz.—p. 774.
Significance of Constitutional Diagnosis and Constitutional Therapy in Children's Sanatorium. K. Klare.—p. 776.
Bilateral Artificial Pneumothorax. H. Dorendorf.—p. 777.
Circulatory Disturbances in Pulmonary Tuberculosis. R. Cobet.—p. 777.

Modification of Tuberculosis by Other Diseases.—As conditions that create a predisposition for tuberculosis by reducing the resistance of the organism, Bacmeister mentions undernourishment and psychic influences, particularly worries. However, diseases such as pernicious anemia and cancer, which likewise weaken the organism, do not favor the development of tuberculosis. Of the circulatory disorders, those that produce a stasis in the pulmonary circulation, such as mitral defects, protect against tuberculosis, whereas deficient perfusion with blood predisposes to tuberculosis. In regard to mixed infections, the author states that they may cause acute exacerbations of the tuberculosis, but he thinks that this factor

was formerly given undue prominence. Bronchitis as well as influenza predisposes to tuberculosis and also exacerbates an existing tuberculosis. However, the former assumption that measles and whooping cough were particularly dangerous for an activation of tuberculosis is, in view of recent observation, no longer justified. In regard to the relationship between syphilis and tuberculosis it is stated that it cannot be demonstrated that syphilitic patients are more predisposed to tuberculosis than other persons; but if a new syphilic infection is acquired in the course of an active tuberculosis, the prognosis of the latter becomes more unfavorable. Of the metabolic disorders, diabetes mellitus is the most frequent complication of tuberculosis. The diabetes is generally the primary and tuberculosis the secondary disease. The combination of gout and tuberculosis is extraordinarily rare, so that formerly an antagonism was assumed between these two conditions. The concurrence of obesity and tuberculosis is likewise comparatively rare, but in constitutional obesity it seems to be somewhat more frequent than in acquired obesity. In connection with obesity, it is mentioned that reducing diets and also the use of hormone preparations for reducing may activate tuberculous foci. The frequent concurrence of pneumonoconiosis and of pulmonary tuberculosis is known, but recent observations indicate that the chemical character of the dust, especially the content in silicic acid, is more important than the size and form of the dust particles.

So-Called Old Age Lung.—According to Leeser, the changes that develop in the lungs of old people are often mistaken for tuberculosis. In describing the pathologic-anatomic as well as the roentgenologic changes in the lungs of the aged he mentions the more distinct outline of the lung, which he ascribes to stasis. Owing to increased pressure, as for instance in emphysema, and to senile degeneration of the vessels and to senile changes in the heart, the hilus appears wider. The senile changes in the vessels make them appear wider and as deeper shadows. There are also changes in the stroma; namely, formation of connective tissue, inflammation and hyaline degeneration. The author further shows how the roentgen picture of the so-called old age lung can be differentiated from the similar roentgenogram of pulmonary tuberculosis.

Deutsche Zeitschrift für Nervenheilkunde, Berlin

125: 117-210 (May 1) 1932

Hematoma of Dura Mater or Hemorrhagic Internal Pachymeningitis. L. van der Horst.—p. 117.
*Ascending Paralysis and Korsakoff's Psychosis in Lymphogranulomatosis. St. Környey.—p. 129.
*Compression of Spinal Cord Produced by Lymphogranulomatosis. L. Delius.—p. 142.
Histopathology of Disseminated Encephalomyelitis. A. Bannwarth.—p. 148.
Normal Muscular Chronaxia in Human Beings. K. M. Walthard and P. Jecklin.—p. 166.
Motor Chronaxia and Sympathetic Neuroses and Exophthalmic Goiter. W. Gros.—p. 192.
Friedreich's Ataxia and Diabetes Mellitus. J. Schloss.—p. 201.

Ascending Paralysis and Korsakoff's Psychosis in Lymphogranulomatosis.—In a woman, aged 48, with lymphogranulomatosis, Környey observed the development of psychotic manifestations that were the beginning symptoms of Korsakoff's psychosis and of an ascending paralysis with extensive sensibility disturbances. The Korsakoff psychosis gradually disappeared but the neurologic symptoms remained. Death followed about three months after development of the neurologic symptoms. Histologic examination revealed a purely degenerative process in the peripheral nervous system and also changes in the corpus mammillare. An acetonuria that had existed for weeks before the development of the neurologic symptoms and a passing hematoporphyrinuria make it appear probable that the pathogenic connection between the lymphogranulomatosis and the neural complication was a disturbance in the metabolism. In the same direction points the identity of the histologic aspects with those processes that are found in Korsakoff's psychosis produced by alcoholism, also the fact that in numerous cases of ascending paralysis a hematoporphyrinuria is demonstrable. These factors make it probable that the different injurious influences, by producing the same pathologic metabolic products, lead to Korsakoff's psychosis, which clinically as well as anatomically is characterized by the same aspects. That in the reported case even following the disappearance of Korsakoff's psychosis the same changes were found in the corpus mammillare as are found in existing, fully developed psychoses, confirms the opinion that the injury of this organ is not the anatomic cause of Korsakoff's psychosis. The combination of an acute ascending paralysis with Korsakoff's psychosis indicates a toxic origin and excludes the existence of acute anterior poliomyelitis or of ascending paralysis of an acute inflammatory genesis. In the toxic form of ascending paralysis the cerebrospinal fluid contains neither globulin nor cells, in contradistinction to the two other diseases mentioned. The ascending paralysis of toxic origin differs from the acute inflammatory form not only in regard to localization but also histologically.

Compression of Spinal Cord Produced by Lymphogranulomatosis.—A case in which compression of the spinal cord was produced by lymphogranulomatosis induced Delius to study the etiology of this compression syndrome. A review of the cases that have been subjected to a pathologico-anatomic examination reveals that there are various forms of this syndrome. He mentions (1) primary meningeal lymphogranulomatous metastases of the dura mater; (2) infiltration of the bone with proliferations of lymphogranulomatous tissues with forward pressing of the dura mater and the compression of the spinal cord produced by this; and (3) lymphogranulomatous proliferations of the lymph nodes, which, outgoing from diseased retroperitoneal or retropleural lymph nodes, grow through the intervertebral foramina into the spinal canal and here may eventually fuse and lead to manifestations of compression.

Medizinische Klinik, Berlin

28: 639-672 (May 6) 1932

*Pseudo-Appendicitis and Concomitant Appendicitis During Childhood. H. Aron.—p. 639.
Tonic Vascular Centers and Their Reflex Relations. J. Pal.—p. 643.
Complications Following Administration of Living Gonococcal Vaccines: Epidemiology of Gonorrhea. H. Felke.—p. 644.
Malignant Sacrococcygeal Chordoma. F. Wahlig.—p. 645.
Acute Quinine Poisoning. G. Wilm.—p. 646.
Present Status of Treatment of Bone Fractures by Wire Traction. W. Block.—p. 647.
Observations on Acquired Enteroptosis in Obesity. H. Kopf.—p. 651.
Meningitis Caused by Bacterium Pyocyaneum. A. Ghon.—p. 654.

28: 673-708 (May 13) 1932

Pulmonary Collapse in Diseases of Lung. H. C. Jacobaeus.—p. 673.
Comparative Roentgenologic and Pathologico-Anatomic Studies on Bronchi in Pulmonary Tuberculosis, with Especial Consideration of Massive Pulmonary Collapse. N. Westermark.—p. 675.
*Pseudo-Appendicitis and Concomitant Appendicitis During Childhood. (C'tn.). H. Aron.—p. 678.
Experimental and Clinical Observations on Action of Anterior Lobe of Hypophysis. K. Heim.—p. 680.
Tuberculosis and Heredity. Roeder.—p. 682.
Tuberculin Ointment Reaction in Children of German Elementary Schools in Prague. F. Lucksch and O. Jellinek.—p. 684.
Blood Picture in Pulmonary Tuberculosis with Especial Consideration of Erythrocyte Sedimentation Speed and of Blood Groups. A. Sylla.—p. 686.
Demonstration of Tubercle Bacilli in Blood According to Löwenstein. L. Walter and F. O. Höring.—p. 688.
Serodiagnosis of Tuberculosis with New Antigen According to Witebsky-Klingenstein and Kuhn. V. Kindermann and J. Schramek.—p. 689.

Pseudo-Appendicitis and Concomitant Appendicitis During Childhood.—Aron points out that in recent years it has been realized more generally that the diagnosis of appendicitis during childhood is much more difficult than was assumed at first, for children are subject to a number of disorders, which, at least during the beginning stage, simulate appendicitis, and also because simultaneously with other disorders true appendicitis may develop, which, however, should be evaluated differently than acute primary appendicitis. On this basis the terms pseudo-appendicitis and concomitant appendicitis have developed. The term pseudo-appendicitis is applied to disease manifestations in which the symptoms of appendicitis exist, without the appendix being inflamed. On the other hand, concomitant appendicitis is a true appendicitis that concurs with other, usually febrile, infectious disorders. However, it is not merely an adventitious concurrence of two different diseases in the same individual, but the appendicitis is an organic partial manifestation of the primary infectious disease. Following these introductory explanations, the author first discusses the various conditions that in children may simulate appendicitis, such as abdominal tuberculosis, pneumonia, acute articular

rheumatism, umbilical colics and intestinal asthma with its main symptom of acetonemic vomiting. He shows that generally appendectomy is inadvisable in these conditions. Further he mentions two disorders that likewise simulate appendicitis but in which appendectomy is not harmful; namely, intussusception and pneumococcic peritonitis. In intussusception an early operative intervention is helpful, and although in the slow progressive form of pneumococcic peritonitis a more conservative treatment is preferable, in the fulminant form a laparotomy may be helpful. In discussing concomitant appendicitis the author first mentions the form that develops as a partial manifestation of measles. In these cases an operative intervention is necessary only if peritonitic symptoms develop. More frequent and more varied in its clinical manifestation is the appendicitis that concurs with tonsillitis. In the majority of cases it disappears again, but occasionally it develops into a severe suppurative appendicitis and laparotomy becomes necessary. The author further discusses the forms of appendicitis that accompany influenza, pneumonia, exanthema subitum, scarlet fever and chickenpox. In the last part of his article he emphasizes that it is no longer justified to resort to a surgical intervention as soon as symptoms of appendicitis develop. He demands that, with the rare exception of severe peritonitis, laparotomy should not be done on the basis of a single examination, but only after careful observation.

Münchener medizinische Wochenschrift, Munich

79: 781-820 (May 13) 1932

Endocranial Complications in Suppurations of Middle Ear and of Accessory Nasal Cavities. L. Haymann.—p. 781.
Estimation of Operability of Malignant Tumors. E. Melchior.—p. 784.
Life Saving Measures in Poisoning and After Surgical Interventions. A. A. Friedländer.—p. 788.
Sterility in Surgery, Especially of Catgut. P. Kuhn and K. H. Dombrowsky.—p. 790.
Bacterial Content of Alcohol. M. Knorr.—p. 793.
*Significance of Intermediary Alcohol (Product of Decomposition of Carbohydrates) for Sleep and Anesthesia. S. Kalter and C. Katzenstein.—p. 793.
*Sun Bronchitis. K. Klare.—p. 795.
Monosymptomatic Acute Appendicitis with Fulminant Course. G. Direktorowitsch.—p. 796.

Significance of Intermediary Alcohol for Sleep and Anesthesia.—In investigating the mechanism of sleep and in the effort to explain it as the result of the action of products of metabolism, Kalter and Katzenstein thought that perhaps the alcohol that develops during decomposition of carbohydrates and during lipolysis may be an important factor. Accordingly they determined the alcohol content of the blood with the patient fasting, during sleep and after the main meal. In 70 per cent of the cases examined, the night values were from 10 to 100 per cent higher than the values detected on awakening. After a heavy noon meal the values were likewise increased and the authors think that the drowsiness after a heavy meal is probably a result of an increase in the alcohol content. However, they are aware of the fact that the intermediary alcohol is only one of the sleep-inducing metabolic products. In the conclusion they point out that the recent report by Zondek (THE JOURAL, May 21, 1932, p. 1826) on bromine formation in the hypophysis and its significance for sleep corroborates the chemical origin of sleep, but they nevertheless persist in their belief that sleep is the result of several products of the intermediary metabolism. They further assume that in inhalation anesthesia intermediary alcohol is probably also a factor.

Sun Bronchitis.—Klare points out that the different constitutional types react differently when exposed to the sun. Whereas dark people generally feel no ill effects from solar irradiation, light persons often show unfavorable reactions. That these reactions may become manifest even in the form of febrile bronchitis, the author observed on numerous children who underwent heliotherapy. The children in whom this form of sun bronchitis develops usually are the exudative lymphatic children. They are usually of light complexion, but of especial importance seems to be also a slight reddish tone in the color of the hair. The skin of these children reacts to sunlight exposure not with pigment formation but rather with inflammation and burning. However, it is not so well known that the irritation by the sunlight may also cause an inflammation of the mucous membrane of the upper respiratory passages. The cause of this reactive inflammation is as yet not fully understood, but the author thinks that it may be due to the decomposition of proteins. In the conclusion he points out that in children with exudative lymphatic diathesis exposure to sunlight should be done with great caution. He considers this warning necessary particularly at the present time, when natural and artificial heliotherapy is often employed without discrimination.

Wiener klinische Wochenschrift, Vienna

45: 577-608 (May 6) 1932

Treatment of Rheumatic Diseases. J. Kowarschik.—p. 577.
*Localized Muscular Spasms and Related Manifestations. J. Wilder.—p. 582.
Group Lead Poisonings Caused by Lead Plate in Millstone. W. Berger, O. Studeny and F. Rosegger.—p. 586.
Concurrence of Tuberculosis and Carcinoma. O. Hoche.—p. 589.
*New Physical Therapy of Circulatory Disturbances. R. Eisenmenger.—p. 591.
Diagnosis of Mediastinal Displacement. H. Bix.—p. 592.
Drinking Cures in Gastric Diseases. W. Zweig.—p. 593.
Therapy of Carcinoma of Female Genitalia. P. Werner.—p. 594.
Advisability of Ligation of Veins in Thrombophlebitis. W. Denk.—p. 595.
Characteristics of Course of Influenza During Present Year. G. Holler.—p. 596.

Localized Muscular Spasms and Related Manifestations.—Wilder describes his observations in three severe cases of crampus neurosis. On the basis of these observations he reaches the conclusion that crampus neurosis is a generalization of a local muscular spasm on the basis of a polyneuritis of various origins; usually it is a radiculitis, in which spondylarthritis deformans is a frequent etiologic factor. In addition to this there is a predisposition to spasm on the basis of a hyperuricemia, the latter being perhaps also responsible for the spondylarthritis. The spasmodic predisposition is indicated clinically by the electrical myospastic reaction. In investigating the literature on crampus neurosis the author had some difficulty, since the sixteen cases that he detected had been reported under various terms. However, in these reports he found additional information on the clinical aspects and particularly on the various causes. He noted that the disorder affects men much more frequently than women, only two of the nineteen patients being women. Race and heredity seem to be of no significance, but it appears that certain occupations, especially those that involve exposure to cold and dampness and that necessitate contact with lead, have a predisposing influence. Alcoholism also seems to be a contributing factor, and the disorder was also noted in patients with diabetes and nephritis; in one instance a trauma of the back preceded. That all these factors really do have significance in the development is proved by the fact that crampus neurosis occurs usually when several of these factors concur. The author discusses the relation between the causal factors in the three cases studied by him and in the cases reported in the literature. He concludes that the latter reports confirm his theories. He further points out that in addition to crampus neurosis the myospastic reaction has yet two other forms of manifestation; namely, myoclonia and myokymia. He shows that these forms have a certain relationship to crampus neurosis.

New Physical Therapy of Circulatory Disturbances.—In the introduction, Eisenmenger discusses the motive powers of the circulation; namely, the cardiac pressure, the activity of the capillaries, the intrathoracic negative pressure and the intraabdominal positive pressure. He then relates that he was able to influence circulatory disorders by producing supra-abdominal air pressure fluctuations. He employs a suction and pressure air pump that acts by way of the flexible abdominal walls and the soft abdominal organs on the diaphragm and through this on the lungs and heart. He illustrates the efficacy of this treatment by five case reports. The treatment is employed for from five to fifteen minutes at a time. During the first two or three minutes the pressure changes are made more rapidly, namely, from twenty to twenty-two times, but then the frequency is reduced to from twelve to sixteen times. The intensity of the pressure, however, is at first weak and later stronger. In the last part of the article the author discusses the influence of the pressure changes on the venous system, the two auricles, the pulmonary circulation, the aorta, the splanchnic region, the liver and the other thoracic and abdominal organs.

Zeitschrift für Tuberkulose, Leipzig

64: 319-398 (May) 1932

Nineteen Years' Experience with Paraffin Filling in Pulmonary Surgery. G. Baer.—p. 319.
Open Pulmonary Tuberculosis in Children and in Young People. P. Beeh.—p. 331.
Universal Sclerosing Tuberculous Large Cell Hyperplasia (Mylius-Schürmann). E. Freund.—p. 339.
Classification of Pulmonary Tuberculosis. H. Ulrici and R. Roeder.—p. 350.
*Oleothorax Treatment. W. Göbel.—p. 363.
Culture of Tubercle Bacilli in Blood According to Löwenstein. P. Kallos.—p. 371.

Oleothorax Treatment.—Göbel considers only one indication for the treatment by means of oleothorax; namely, the early formation of adhesions during pneumothorax treatment. The adhesions usually develop following exudation. In such patients the transformation of a pneumothorax into an oleothorax makes it possible to maintain the collapse of the lung, and these cases are especially suitable for oleothorax treatment because as a result of the preceding exudation and of previous higher pressures the pleura is used to greater irritation and thus tolerates the oil more readily. Because the resorption of oil is much slower than that of air, after-filling of the oleothorax is necessary only after long intervals. A requirement for the success of the oleothorax is that the existing pneumothorax is still fully active. In certain conditions the author found it advisable to introduce the oil gradually. During the first filling he introduces from 10 to 20 cc., and additional quantities are introduced at intervals of eight days. By degrees he replaces from 200 to 400 cc. of air by oil. For the compression of caverns that do not collapse under the influence of the pneumothorax, he considers oleothorax inadvisable, at least when children and young persons are concerned.

Zentralblatt für Chirurgie, Leipzig

59: 1251-1344 (May 21) 1932

Nature of Analgesia During Introductory Stage of Anesthesia. P. Sudeck.—p. 1259.
*Traumatic Origin of Renal Calculi. F. Oehlecker.—p. 1264.
*Vertebral Fracture with Increasing Paralysis, as Exceptional Case Subjected to Early Operation. F. Oehlecker.—p. 1274.
*Valve Formation in Trepanation for Relieving Pressure. H. Kümmell, Jr.—p. 1282.
Diathermy Operation in Hypertrophy of Prostate. L. Treplin and R. Vogel.—p. 1284.
Renal Resection in Unilateral Long Kidney (Crossed Dystopy). O. Rumpel.—p. 1290.
Ligneous Thyroiditis (Riedel's Disease). J. Oehler.—p. 1295.
Renal Colic Simulating Calculous Colic: Problem of Hemorrhagic Pyelitis (Rumpel). E. Roedelius.—p. 1297.
Present Status of Anesthesia. M. Kappis.—p. 1305.
Pelvirenal Passage of a Thorium Dioxide Preparation in Pyelography. W. Löhr and A. Hendriock.—p. 1312.
Severe Subcutaneous Tearing of Kidneys in Relatively Slight Injury with Remarks on Mechanism of Injury. F. Bonhoff.—p. 1331.
Surgery of Spleen. T. Naegeli.—p. 1335.

Traumatic Origin of Renal Calculi.—Oehlecker illustrates the posttraumatic development of renal calculi by means of the clinical history of a man, aged 45. In a fall from a great height, he sustained in addition to other severe bone fractures a fracture of the third lumbar vertebra, with avulsion of the transverse processes of the lumbar vertebrae. Microscopic examination of the urine revealed the presence of blood. Spinal paralysis was absent and there were indications that only a slight commotio spinalis existed. It is assumed that the oliguria that was observed during the first few days was a result of the shock. During the first three months following the injury, while the bones healed, there was no fever, and renal as well as vesical complications were absent. Later it was noticed incidentally that the urine contained leukocytes and Bacillus coli. Three months after the accident there developed severe manifestations of nephrolithiasis and of pyelonephritis; both kidneys were slightly infected with Bacillus coli and Bacillus proteus. Roentgenoscopy during the fourth month revealed on both sides two renal calculi, and when the former roentgenograms that had been made to control the healing of the vertebral injuries were again inspected, it was found that during the seventh week following the trauma the right kidney contained two small concrements and on the left side some doubtful shadows were visible. However, the roentgenograms that had been made immediately following the trauma gave no indications for the presence of calculi. Accordingly the author thinks that it cannot be doubted that these calculi are the result of the trauma. In discussing the mechanism of the posttraumatic formation of renal calculi he points out that small blood coagula, fibrin floccules, aggregates of bacteria or products of inflammation may act as centers of formation. He thinks that in the reported case fibrin floccules probably acted as centers and that eliminated calcium salts effected a precipitation of colloids and also influenced the crystalloids, and thus the calculi were formed.

Vertebral Fracture with Increasing Paralysis.—Oehlecker points out that in vertebral fractures that are followed by paralysis it is a general rule not to resort to surgical intervention. That this rule may be departed from in an exceptional case, however, he shows in his report of the clinical history of a youth, aged 19, who sustained a fracture of the body and of the arch of the sixth thoracic vertebra. Within three days after this, a complete paralysis of both legs had gradually developed. The tendon, abdominal and cremaster reflexes were abolished and the bladder and rectum were paralyzed, whereas the skin sensitivity was preserved. Noteworthy were especially the severe thoracic and cardiac pains. The laminectomy that was done three and one-half days after the accident revealed that the arch and the inferior articular process of the sixth thoracic vertebra had been broken out. Into the fracture clefts of the arch which ended in the intervertebral foramina, the roots of the spinal nerves were incarcerated. The broken part of the arch was easily removed and following removal of a tumor-like, epidural fat structure that was strongly perfused with blood and had compressed the spinal cord, a pulsation of the dura became again noticeable. At the sixth thoracic vertebra the spinal nerves were resected and following the operation the severe thoracic pains had disappeared. Now, eighteen months after the injury, the youth is again able to march several miles. The author thinks that this favorable result justifies his intervention. He emphasizes that this case does not nullify the general rule not to operate in vertebral fractures with resulting paralysis, and then enumerates the various reasons why in this case an operation was advisable.

Valve Formation in Trepanation for Relieving Pressure.—Kümmell describes and gives illustrations of a method that combines an exploratory trepanation with a measure for relieving pressure. The method consists of a valve formation by suturing the insertion of the temporal muscle on its upper rim to the dura mater. The valve that is formed in this manner withstands a great internal pressure from the brain and it has sufficient elasticity to retain the necessary tension. The method was employed in fifteen cases. Among these were five advanced cases in which the relief from pressure was too sudden or was no longer of influence. These patients died. In some of the others, protrusions developed; but manifestations of incarceration were not noted, and the valve resisted the pressure sufficiently so that real prolapse was prevented. A considerable improvement was effected in five cases. In some of these the good results may have been partly due to the roentgen treatment that was combined with the valve formation. In comparing this method with others, the author shows that it combines the advantages of the Cushing valve with the possibility of the wide opening.

Zentralblatt für Gynäkologie, Leipzig

56: 1201-1264 (May 14) 1932

Stage of Proliferation of Young Corpus Luteum in Human Beings. R. Meyer.—p. 1202.
Unsuitableness of Term "Posterior Occipital Presentation," G. Burckhard.—p. 1210.
Hematoma of Round Uterine Ligament as Rare Obstetric Complication. N. G. Nordenson.—p. 1212.
*Value of Kauffmann's Diuresis Experiment for Test of Cardiac Function in Operative Gynecology. H. Keckeis.—p. 1217.
Therapeutic Procedure During "Entrance Effect" (Entrance of Fetal Head into Pelvis). W. Uter.—p. 1221.
Torsion of Uterine Tube. J. Ross.—p. 1224.
*Treatment of Female Gonorrhea with Mixed Vaccines. H. Gottlieb.—p. 1227.

Kauffmann's Diuresis Experiment for Test of Cardiac Function in Operative Gynecology.—Keckeis found Kauffmann's diuresis experiment a valuable aid in testing the functional capacity of the heart before gynecologic operations. Moreover, he increased the indications for the use of the test. When the test gave a positive reaction a suitable cardiac

treatment was instituted, and after this treatment was completed a control test was made. However, the favorable outcome of this control test has to be evaluated with a certain reservation, since it only indicates a good cardiac function during rest. With consideration of the greater requirements during operative trauma, a new control test is necessary after the patient has been up and active. If this test has a favorable outcome, it can be assumed that the cardiac function will be equal to the requirements of anesthesia and operative trauma. If these precautions are taken, one is better protected against undesirable postoperative complications.

Treatment of Female Gonorrhea with Mixed Vaccines.—In the treatment of 250 women with gonorrhea, Gottlieb employed the injection of large doses of mixed vaccine, a method that was first recommended by Löb. But instead of making the injections intravenously the author gave them intramuscularly. The results obtained with this treatment were unusually favorable. Complications were never observed, and it is assumed that the changes in the blood picture and the fluctuations in the temperature are signs of the mild protein action, which the large dose of the mixed vaccine produces in addition to the specific action.

Jurnal Medichnogo Tsiklu, Kiev

2: 1-248 (No. 1) 1932

Mechanism of Stimulating Effect of Blood Transfusion. O. O. Bogomoletz.—p. 5.
Hypoglycemic Hormone of Suprarenal Cortex. N. B. Medvedev.—p. 15.
Influence of Inspiration of Carbon Dioxide on Rhythm and Form of Breathing. E. N. Kohan and V. I. Sokolov.—p. 21.
Influence of Parabiosis on Hormones of Sex Glands and Anterior Lobe of Hypophysis. L. Perelman.—p. 27.
Experimental Posthemorrhagic Anemia in Parabionts. Ya. G. Ujanskiy.—p. 57.
Quantity and Distribution of Glutathione in Organs of Normal Animals: I. N. B. Medvedev.—p. 75.
*Quantity of Glutathione in Organs in Presence of Experimental Tumors: II: N. B. Medvedev.—p. 93.
Influence of Various Forms of Endocrine Deficiency on Quantity and Distribution of Glutathione in Organs of Dogs and Rabbits: III. N. B. Medvedev.—p. 103.
Variation in Quantity and Distribution of Glutathione in Tissues Under Influence of Pancreas and Suprarenals. N. B. Medvedev.—p. 115.
Culturing Kidney Tissue of Mammals. E. O. Tatarinov and O. S. Glazman.—p. 133.
Reaction of Liver to Foreign Proteins. S. Kapran.—p. 141.
Permeability of Erythrocytes for Dextrose in Vitro and in Vivo in Normal and in Disturbed Carbohydrate Metabolism. E. M. Timofeev.—p. 155.
Study of Tissue in Embryonic Tumors. A. I. Smirnova-Zamkova.—p. 171.
Some Biochemical Changes of Organism in Various Pathologic Processes. F. I. Primak.—p. 185.
Pernicious Anemia with Nervous Complications. L. M. Levitskiy and S. M. Sharavskiy.—p. 197.
*Clinical Aspect of Thiocyanate Therapy in Treatment of Hypertension. V. A. Elberg and N. A. Skulskiy.—p. 213.

Quantity of Glutathione in Organs in Presence of Experimental Tumors.—Medvedev studied the glutathione content of the thyroid, suprarenals, kidney, brain, spleen, lungs, heart, muscle, submaxillary gland, pancreas, liver, testis and ovary of normal rats and mice and also of rats and mice infected with experimental sarcoma and carcinoma. He concludes that the quantity of glutathione is greater in the organs of normal animals. During the growth of sarcoma, the glutathione of the tissues decreases. The thyroid is the greatest loser. During the growth of Jobling's cancer all organs except the liver lose glutathione and the thyroid is entirely deprived of glutathione. Ehrlich's cancer in mice is also accompanied by a loss of glutathione. In sarcoma in the rat, the glutathione content of the lung is almost normal. All cancerous tissue is poor in glutathione. The concentration of glutathione in the tumor tissue of Jobling's rat carcinoma is 105 mg. per hundred cubic centimeters, and in Ehrlich's mouse carcinoma it is 128 mg. The low concentration in Jobling's cancer is in favor of a cancerous rather than a sarcomatous origin. During the development of cancer there is a disturbance in metabolism throughout the various organs, and this is manifested in decreased cellular respiration. It is possible that the dissociated metabolism of the cancer cells is a result of the lack of respiratory substance. For further study it is important to examine the glutathione content of the organs during the period of cancerization and especially before the cancer is recognizable morphologically.

Thiocyanate Therapy in Treatment of Hypertension.—Elberg and Skulskiy studied the effect of calcium thiocyanate in the treatment of sixty-three patients with hypertension. They found this substance efficacious not only in the treatment but also in the prophylaxis of hypertension; the blood pressure is decreased and often brought back to normal and at the same time the symptoms present in hypertension disappear. The material for study consisted of arterial hypertension, essential as well as arteriosclerotic. Calcium thiocyanate was administered in doses of 0.05 Gm. and the treatment was extended over a period of eight weeks. The effects lasted in some instances ten months. Positive results were obtained in essential hypertension and the indications were good in arteriosclerosis. The patients were treated with calcium thiocyanate in the form of drops, 0.5 cc. (0.05 Gm. of calcium thiocyanate) or eight drops given by mouth three times a day and preferably after each meal. When patients suffered no difficulty, the dose was at times increased to 0.1 Gm. twice a day for a period of from one to two weeks and in exceptional cases 0.1 Gm. three times a day for one week. Treatment should not last over ten weeks, preferably from six to eight weeks. Theobromine sodiosalicylate and calcium lactate and also dextrose, sometimes atropine and an alkaloid obtained from opium may also be prescribed whenever calcium thiocyanate is administered. This therapy is indicated in arteriosclerosis with hypertension, essential hypertension, climacteric hypertension, vasomotor disturbance with spasms, angina with hypertension, cardiosclerosis, syphilitic aortitis with hypertension, tabes, articular pains caused by gout, and endarteritis. The contraindications include active tuberculosis, various inflammatory conditions of the mucous membrane and inflammation of the peritoneum and abdominal organs, especially the liver and kidneys. The treatment does not necessitate a special dietary regimen and the patient does not have to be hospitalized. The author reports good results in 90 per cent of the patients who had failed to respond to other methods of treatment.

Sovetskiy Vestnik Venerologii i Dermatologii, Moscow

1: 1-56 (No. 3) 1932

Dermatitis Herpetiformis in Children. S. A. Bogdanovich.—p. 13.
Tuberculous Infection of Skin. A. A. Zenin.—p. 18.
*Syphilitic Diabetes. S. Kh. Krapivin.—p. 24.
Clinical Aspect of Untreated Gonorrhea Among Buriat-Mongolians. I. G. Zaks and I. M. Porudominskiy.—p. 29.
*Serodiagnosis of Leprosy. A. K. Bulkin and B. V. Glukhovtsev.—p. 38.
Instance of Reinfection with Syphilis: Case. S. O. Bron.—p. 44.
Hard Chancre in Urethra of Patient with Acute Gonorrhea: Case. I. A. Kogan.—p. 45.

Syphilitic Diabetes.—Krapivin describes the various types of diabetes and discusses the literature. Diabetes occurring as a result of syphilis is not frequent—one writer reports 7.8 per cent of some 500 cases of diabetes. The author reviews the history of a case and concludes that his patient had syphilitic diabetes since antisyphilitic therapy alleviated the ulcerative condition of the soft palate and resolved the infiltration in the walls of the subcutaneous veins; there was improvement of the diabetic condition after antisyphilitic therapy combined with insulin, while insulin alone and diet did not help the condition at all. The syphilis in this patient was congenital; the gummatous condition of the soft palate appeared during early childhood. The clinical picture with severe polyuria, glycosuria, great thirst, polyphagia, poor general condition and diarrhea designated pancreatic diabetes, while absence of nervous symptoms and disturbances was in favor of other forms. Neoarsphenamine and insulin were used in the treatment. When treatment was discontinued the process was again reactivated, and the patient died during a period of coma.

Serodiagnosis of Leprosy.—Bulkin and Glukhovtsev in 1928 chose 148 patients from the Kubansk (Kholmsk) leper colony, on whom they performed the Bordet-Wassermann reaction for the deviation of complement against various syphilitic antigens, the active modification of Hecht-Muttermilch and the precipitation reaction of Kahn. Parallel tests were performed with antigens from leprous tissue and antigens from cultures of actinomyces streptothrix isolated by Bulkin. The blood was drawn from fasting patients with a needle or a syringe and allowed to stand for half an hour in a thermostat and from two to three hours on ice, and a part was centrifugated for the active modification reaction of Wassermann the same day and

the rest was placed on ice till the next day and then inactivated at 56 or 57 C. for thirty minutes. The results were as follows: The Wassermann reaction with a liver antigen was positive in 51.5 per cent; the active modification of Hecht-Muttermilch was positive in 31 per cent, and the Kahn reaction in 41 per cent of the cases. The phenomenon of paradoxical deviation of the syphilitic antigens in leprosy was present in 12 per cent of the cases. The active modification of the Wassermann reaction of Hecht-Muttermilch gives results similar to those with the heart antigen. The divergence in the results of various leprous serums with syphilitic antigen may be due not only to the age of the serum but also to the type of the syphilitic antigen and to the activity of the leprous process. With a sodium hypochlorate treated antigen made from leprous tissue, the positive reactions reached 71.2 per cent (tuberous 83, mixed 73, and anesthetic 51 per cent); with a sodium hypochlorate treated antigen made with cultures of streptothrix, the positives were 88.2 per cent.

Hospitalstidende, Copenhagen

75: 495-522 (March 31) 1932

*Fractures of Radius: Results of Treatment. G. Wieth-Petersen.—p. 495.

Fractures of Radius.—Wieth-Petersen reports 174 cases of fracture of the radius observed from 1927 to 1930. After reposition with a bandage for eight days, active exercise of the wrist was begun. There was no massage or passive exercise. The after-examination in ninety patients showed clinically good results in 86.7 per cent, roentgenologically good in 77.8 per cent and functionally good in 94.4 per cent. About 65 per cent of the patients were able to return to work in the course of four weeks, the remainder in eight weeks at the most, with the exception of one case, which required twelve weeks.

75: 523-550 (April 7) 1932

Constipation and Gastritis. K. Faber.—p. 523.
*Significance of Climbing Curves in Fractional Examination of Stomach Contents. K. Roholm.—p. 530.
Does Zondek's Ether-Sugar Method Mean Improvement in Hormonal Pregnancy Reaction? H. C. A. Lassen.—p. 543.

Climbing Curves in Fractional Examination of Stomach Contents.—Roholm says that, while the climbing curve may be connected with a number of different conditions, there probably are inflammatory changes in the stomach in the majority of cases. The practical importance of the curve is limited, mainly because the meaning of the climbing curve has not yet been definitely determined. The most interesting feature of the curve lies in its occurrence in cases without ulcer. Only by more extensive use of the fractional method of examination can a clearer understanding of climbing curves be reached.

75: 579-604 (April 21) 1932

*Filtration Determination According to Holten and Rehberg in Patients with Hypertonia. E. Roelsen.—p. 579.
*Graduated Intracutaneous Tuberculin Reactions as Adjuvants in Differential Diagnosis Between Tuberculous and Nontuberculous Conditions. J. Holm and S. Sigurdsson.—p. 590.
Course of Complement Fixation in Gonorrheal Disorders of Joints in Women. V. Genner, K. Antons and H. Boas.—p. 597.

Filtration Determination According to Holten and Rehberg in Patients with Hypertonia.—This test, made by Roelsen in twenty-five patients with essential hypertension, showed certain reduction in only four cases, in three of which the Volhard-Strauss test gave normal concentration ability. In five patients with nephrosclerosis or chronic nephritis and three with acute nephritis, the filtration values agreed with the results of Holten and Rehberg in similar cases. There was normal filtration in two patients with orthostatic albuminuria. In seven out of eight persons without signs of renal disease or hypertension, the filtration was normal; in one it was on the borderline. The slight but certain reduction of filtration seen in two cases without signs of renal disease but with transition toward hypertension might, he thinks, be due to a possible renal arteriosclerosis.

Graduated Intracutaneous Tuberculin Reactions as Adjuvants in Differential Diagnosis.—The investigations of Holm and Sigurdsson on these reactions in 116 patients with certain chronic active tuberculosis and in 196 nontuberculous control patients disclosed a definite difference in the sensibility to tuberculin in the two groups, 84 per cent of the tuberculous patients giving a positive reaction on a given dose, while 93 per cent of all the control patients and 86 per cent of the control patients with positive Pirquet reaction gave a negative reaction on the same dosage.

Norsk Magasin for Lægevidenskapen, Oslo

93: 481-608 (May) 1932

*Tuberculosis by Generations. F. Andvord.—p. 481.
*Polypous Tumors of Stomach and Intestine (Invagination of Small Intestine). J. Kaarstad.—p. 495.
*Changes in Blood Sugar Picture During and After Operative Interventions in Ether Anesthesia. E. Thoresen.—p. 499.
*Variations in Leukocyte Count in Operative Interventions. E. Thoresen.—p. 517.
*Treatment of Diabetes with Larger Amounts of Carbohydrates. O. Bang.—p. 522.
Malaria Treatment of Dementia Paralytica: After-Examination in Psychiatric Clinic, Vinderen. K. Bendixen.—p. 539.
Foreign Bodies: Three Cases. F. Leegaard.—p. 562.
After-Examination of One Hundred and Seventy-Four Persons with B C G Vaccination. S. Lunde.—p. 568.

Tuberculosis by Generations.—Andvord finds that the marked difference in the mortality from tuberculosis in Norway, Sweden and Denmark appears also in the predisposition to and reaction on primary tuberculous infection among adults, the Danes being most immune and the Norwegians least. The total death rate from tuberculosis in Norway has declined from 31 per 10,000 in 1900 to 15.8 per 10,000 in 1929, and the mortality from tuberculosis in the first years of life is approaching that of England and of the other Scandinavian countries. In the author's opinion tuberculosis is an infectious disease of the family and the generation, becoming more and more benign in proportion to the increased resistance of the generation, as the result of a certain adaptation or probable inherent immunity. The possibility of a gradual weakening somehow of the virulence of the bacillus is suggested.

Polypous Tumors of Stomach and Intestine (Invagination of Small Intestine).—Kaarstad reports five cases of polypous tumors of the stomach and intestine. In a case of adenomas and papillomas of the small intestine, with invagination, in a patient aged 20, the invagination is ascribed to a polypus. There was cancerous degeneration of polypi of the stomach in two of the other four patients, all older persons.

Blood Sugar During and After Operations.—In 126 patients operated on under ether anesthesia, Thoresen found that during operation the blood sugar was augmented from an average of 108 mg. per hundred cubic centimeters to an average of 171 mg. The rise was demonstrated in 122 cases (98.8 per cent), with a fall in two and no change in two. The rise increased with the duration of the anesthesia, was more marked in children than in adults, in intraperitoneal than in extraperitoneal interventions, and was not affected by subcutaneous infusion of physiologic solution of sodium chloride during operation. The highest value was reached at the end of the anesthesia or some minutes later and was followed by a rapid fall. In ten patients operated on under local anesthesia, increased blood sugar values were noted during operation, but the increases were less marked than in operations under ether anesthesia.

Variations in Leukocyte Count in Operations.—Thoresen reports that in twenty-one out of twenty-three patients operated on under ether anesthesia the leukocyte count was increased up to 29,600 during the operation and the hours immediately after. In twelve of the fourteen cases with serial examinations the maximum increase was noted from two to four hours after operation, in two cases later. The increase was greater in children than in adults, in long anesthesia than in short. In two out of four patients operated on under local anesthesia there was a slight fall, in one a rise, with a maximum of 15,000 the day after operation. The author states that no causal relation can be inferred between the increase in blood sugar and in the number of leukocytes during operation under ether anesthesia.

Treatment of Diabetes with Larger Amounts of Carbohydrates.—Bang would replace the old diet rich in fats and poor in carbohydrates with one high in carbohydrates. He believes the possibility is not excluded that the acidosis and its concomitants found in diabetic persons who neglect their diet or live on a diet low in carbohydrates may be an etiologic factor in the frequent and increasing occurrence of arteriosclerosis in diabetes even in the young.